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The Critical Role of Knowledge Management in Achieving and Sustaining Organisational Competitive Advantage

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Abstract

The critical role of knowledge management in achieving and sustaining competitive advantage has been strongly emphasised in the extant literature. However, most previous studies were conceptually grounded and empirically examined in advanced, developed and newly industrialised countries. In addition, research to date has predominantly explored findings from a large company view while little attempt has been made to address the relative importance of different factors constituting the organisational KM capability in the context of Asian emerging, less developed countries such as Vietnam where a socialist market economy, a Confucian culture and a majority of small and medium sized enterprises currently exist. By adopting a resource-based theory of the firm with an extension of a knowledge-based perspective, this paper aims at developing and empirically validating a conceptual model of the relationships between KM capability components and their impacts on a firm's competitive advantage in Vietnam. The results of 148 surveyed respondents in the construction industry reconfirmed a general agreement found in the literature that a combined social and technological approach is ideal to take advantage of their significant positive correlations in improving organisational competitive advantage. Moreover, in the Vietnamese-specific context, the study indicated that while culture is the most important issue affecting knowledge management, integration with information technology may assist to overcome cultural barriers and provide a stronger contribution to competitive advantage.

Keywords: Knowledge management, Social capability, Technical capability, Resource-based view, Knowledge-based view, Competitive advantage

1. introduction

In the twenty first century landscape with all its uncertainty and dynamism, many firms are competing in a complex and challenging environment which is being transformed by many factors ranging from globalisation, technological development and increasingly rapid diffusion of technology, to the development and use of knowledge (Hitt, Keats, and DeMarie, 1998).

As such, the foundation of organisational competitiveness has shifted from an emphasis on physical and tangible resources to knowledge (Wong and Aspinwall, 2005) and managing knowledge-based resources has become the key for sustaining competitive advantage (CA) and superior performance (Grant, 1996b; Grover and Davenport, 2001; Jackson, Hitt, and DeNisi, 2003; Sharkie, 2003; and Teece, Pisano, and Shuen, 1997).

Although the concepts of knowledge management (KM) and CA have been strongly emphasised in existing literature, only a limited number of studies have explored the resource-based view (RBV) of KM. Analyses to date have mainly focused on infrastructure elements in isolation which is inconsistent with extensive discussions found in the literature dealing with the interwoven nature of the organisational factors (Zheng, 2005). In addition, most previous studies were conceptually grounded and empirically examined in advanced, developed and newly industrialised countries. Research has predominantly explored findings from a large company perspective with a general agreement that a combined social

and technological approach is ideal. However, little attempt has been made to address the relative importance of different factors constituting organisational KM capability in the context of Asian emerging, less developed countries such as Vietnam where a socialist market economy, a Confucian culture and a majority of small and medium sized enterprises (SMEs) currently exist.

This study presents the results of a survey on the inter-relationships among the KM capability components and their impact on a firm's CA conducted in the Vietnamese construction industry. Viewed from both social and technical perspectives, the study also aims at predicting which components of KM would be most significant and effective in the context of Vietnam, one of the Asian developing countries with its own specific features, characteristics and conditions.

The paper begins with an overview of the RBV of KM coupled with a review of empirical studies that describe and link KM capability components leading to positive outcomes. Drawing on the literature review and the theoretical issues discussed, a specific model of KM capability-based CA of the firm is proposed. The next section presents an outline of the methodology employed for conducting the survey and its findings based on various statistical analyses. The paper concludes with an interpretation and discussion of the overall results gained from the study, followed by some indications of the study limitations as well as the proposed future research directions.

The key implication in using this model is that practising managers in Vietnam and other Asian developing countries with similar economic and Confucian cultural environments, while employing both social and technical KM capabilities, need to strongly emphasise the more important role of cultural elements to achieve and sustain a CA in the current complex landscape.

2. Literature review

This section deals respectively with a RBV of KM and a review of KM capability.

2.1 Resource-based view of knowledge management

The RBV of CA examines the link between a firm's idiosyncratic attributes and performance (Barney, 1991) based on its internal strengths to take advantage of opportunities and counter threats in the market, aimed at creating sustainable CA through acquiring, utilising, and exploiting firm-specific resources (April, 2002; Riahi-Belkaoui, 2003) and, more importantly, integrating different resources to form strong organisational capabilities (Grant, 1996a; Verona, and Ravasi, 2003; and Zollo and Winter, 2002).

Emerging as an extension of the RBV, the knowledge-based perspective defines firms as bodies that generate, integrate and distribute knowledge (McEvily, and Chakravarthy, 2002; Miller, 2002; Narasimha, 2000; and Narasimha, 2001) which is considered to be the key or strategic asset to hold the potential of sustainable CA (Grant, 1996a; and Lopez, 2005). It explains how firms leverage their KM resources to create unique KM capability to determine a firm's overall effectiveness (Gold, Malhotra, and Segars, 2001).

Thus, adopting the resource-based theory of the firm blended with a knowledge-based approach, KM capability is explicitly recognised to be central in creating CA of a firm in today's dynamic market place. The following section provides a review of empirical studies dealing with this concept.

2.2 Review of knowledge management capability

Extending the traditional notion of organisational resource-based capability to KM function, a firm's KM capability is defined as 'its ability to mobilise and deploy KM-based resources in combination with other resources and capabilities', leading to sustainable CA (Chuang, 2004, p460). Table 1 (Appendix 1) presents a summary of empirical studies on KM capability conducted since 1995. The columns show the names of authors and KM components including enablers or infrastructure elements and processes. The research objectives, as displayed in the last column, are mainly to investigate the connection among KM components and identify their impact on organisational outcomes such as KM effectiveness, organisational effectiveness, CA, and firm performance. Using this table the study has identified perceived gaps in the relevant literature and adapted prior research to develop a research model.

Viewed from resource-based and knowledge-based perspectives, Gold et al. (2001), followed by Smith (2006) are amongst the first KM researchers to identify that technology, culture, and structure are rare and firm-specific resources which likely serve as the source of organisational capability. Meanwhile, Lee and Choi (2003) measure the impact of KM enablers including structure, culture, people, and technology on organisational performance. Similarly, Khalifa and Liu (2003), Gimenez and Rincon (2003), and Zheng (2005) identify a number of factors as the primary sources of organisational effectiveness that include strategy, culture, structure, leadership, and technology.

It is noted that Chuang's (2004) model is one of a limited number of studies employing the RBV of KM to develop theoretical links and empirically examine the relationship between KM capability and CA. However, the model examined the four elements of KM resources of a firm in isolation (namely structure, culture, and people as the social perspective, and information technology as the technical perspective) which is inconsistent with extensive discussions found in the literature of the interwoven nature among the organisational factors (Zheng, 2005). In addition, most

studies were conceptually grounded and empirically examined in advanced, developed and newly industrialised countries with a heavy focus on large companies. To date, only scant attention has been paid to address the relative importance of different factors constituting the organisational KM capability in the context of Asian emerging, less developed countries considering their own specific features, characteristics and conditions.

This paper seeks to fill the identified gaps by adapting Chuang's (2004), Lee and Choi (2003), and Smith's (2006) studies to develop a theoretical model of KM capability based CA of the firm and then, empirically, to test the model by conducting a survey in Vietnam where a socialist market economy, a Confucian culture and a majority of SMEs currently exist. The development of the research model is discussed in the following section.

3. Theoretical development

This section discusses the technical and social KM capabilities and CA and continues to propose a research model.

3.1 Technical KM capability and CA

Though described as a major business resource and a key source for attaining long-term CA (Gold et al., 2001; Nemati, 2002), little evidence has been found of the direct effects of IT alone and performance correlations while at the same time, if existing (though not significant), frequent negative correlations suggest that IT may worsen a firm's competitive position (Porter, 1985; and Powell and Dent-Micallef, 1997). Due to possible IT imitation by competitors, IT per se does not generate sustainable performance advantages and firms must use IT to leverage or exploit other firm-specific, intangible resources such as organisational leadership, culture, and business processes (Clemons and Row, 1991; and Henderson and Venatraman, 1993). Citing the theory of technology assimilation, Khalifa and Liu (2003) also state that technologies must be infused and diffused into business processes to enhance organisational performance (Cooper and Zmud, 1990; and Fichman and Kemerer, 1997). In the context of KM, therefore, IT should be incorporated with other KM capability dimensions to exhibit and significantly improve its impact on a firm's CA.

3.2 Social KM capability and CA

Organisational social resources (now sometimes referred to as social capital) generally comprise the sum of the actual and potential resources available that derive from the network of relationships possessed by a human or in a social unit (Nahapiet and Ghoshal, 1998). Lee and Choi (2003) propose that the ability of organisational structure,

organisational culture, and people as the three critical dimensions of social KM resources to encourage the multi-faceted activities associated with successful implementation of KM has been found to be a key distinguishing factor of successful firms. These valuable resources typically evolve over a long period of time through the accumulation of organisational operation experience (Gold et al., 2001), and, thus, become hard to acquire and complex to duplicate. When effectively combined with the strong technical KM dimension they will become a unique organisational KM capability which provides a sustained CA (Chuang, 2004).

3.3 Proposed research model

Based on findings in the literature review coupled with theoretical development, a research model of KM capability-based CA of the firm is now proposed (Figure 1). The key components are identified as the technical KM capability (IT) and the social KM capability contributing to organisational CA. The model demonstrates that these two perspectives of KM capability have inter-correlations which strongly support their impacts on CA.

4. Methodology

This section deals with developing measures of theoretical constructs and techniques of data collection in this study.

4.1 Operationalising measures

There are three main constructs in the theoretical model, namely (1) technical KM capability; (2) social KM capability; and (3) competitive advantage. Measuring these constructs are mainly adapted from studies by Lee and Choi (2003), Chuang (2004) and Smith (2006) using seven-point Likert-type scales anchored by 1 (strongly disagree) and 7 (strongly agree).

(1) Technical KM capability or IT refers to the technical systems within an organisation that determine how knowledge travels throughout the enterprise and how knowledge is accessed (Leonard-Barton, 1995). Measuring this variable is based on Smith (2006) reflecting numerous aspects of technological infrastructure that are part of effective KM within an organisation such as collaboration, distributed learning, and knowledge mapping.

(2) Social KM capability is predicted by the three-factor scales of structure, culture, and people.

Organisational structure is defined as 'the rules, policies, and procedures, hierarchy of reporting relationships, incentive systems, and departmental boundaries that organise tasks within the firm' (Gold et al., 2001, p. 198). In this study, the

variable is operationalised based on Smith (2006) assessing the extent to which a formal organisational structure facilitates the discovery, creation, sharing, exchange, and transference of new knowledge within the organisation.

The most significant hurdle preventing effective KM is organisational culture (Gold et al., 2001) which is defined as 'the shared values, beliefs and practices of the people in the organisation' (McDermott and O'Dell, 2001, p. 77). This study adapts Smith's (2006) instrument scale to measure organisational culture through its important components including employee interaction, corporate vision, and senior management support.

Predicting the effect of human resources on KM, this study relies on task-shaped skills of employees which imply a degree of understanding by workers of their own and others' task areas (Lee and Choi, 2003) that are both deep (the vertical part of the 'T') and broad (the horizontal part of the 'T') (Leonard-Barton, 1995). The operationalisation of this construct developed by Lee and Choi (2003) is followed in the current study to access knowledge domains of employees and their various applications in particular products.

(3) Competitive advantage is considered to be the objective of strategy (Day, 1984; Porter, 1985) and described as the unique position that an organisation develops over its competitors by employing its resources (Hofer and Schendel, 1978). The multi-dimensions of the construct developed by Chuang (2004), including innovativeness, market position, mass customisation, and difficulty in duplicating, is adopted in this study.

4.2 Data collection

The survey questionnaires attached with invitation letters were directly distributed to 600 potential respondents as senior management participating in a large exhibition of construction firms (VinaBuild) organised in Hochiminh City, Vietnam in September 2007.

The reason for selecting this sector to gather empirical data is because it is a project-based industry which utilises a variety of many separate firms in a temporary multidisciplinary organisation and thus operates within a dynamic and changing environment (Kamara, Augenbroe, Anumba, and Carrillo, 2002). Effective KM is being recognised as a vehicle through which the industry can address its critical needs for innovation, enhanced business performance, client satisfaction, improved efficiency, and effectiveness (Egan, 1998; Egbu, Sturgesand, and Bates, 1999). As such, it is critical to identify on which factors to focus if construction firms are to improve their CA through effective management of their knowledge assets.

5. Data analysis and results

This section covers sampling procedures and the statistical analyses employed.

5.1 Sample characteristics and profile

A total of 170 responses were returned, 22 had data missing and, therefore, were not included in the analysis, producing an acceptable useable response rate of 25%. Table 2 (Appendix 2) summarises the descriptive statistics of company profile and personal characteristics for the 148 respondents in terms of their type of business, number of employees, education, position, and years in current company.

5.2 Reliability and validity analysis

The construct validity and reliability of the multi-item constructs were assessed using the principle component analysis (PCA) with Varimax rotation and coefficient (Cronbach) alpha. Items with low factor loadings (absolute values below 0.5) were deleted, while values of coefficient alpha above 0.7 were considered to represent acceptable reliability (Hair, Anderson, Tatham, and Black, 1998).

Based on these criteria, the results of the study (described in Table 3 - Appendix 3) showed that all construct measurement scales had satisfactory coefficient (Cronbach) alpha (though slightly lower for IT construct). The PCA for all composite variables except organisational culture and people extracted only one underlying component with an eigenvalue greater than 1 explaining from 46.154% to 61.230% of the total variance in the original sets of variables and so unidimensionality was assumed. Moreover, all relevant items were found to have component loadings greater than the minimum criterion of 0.5, therefore, these were considered to be acceptable for further analyses.

However, the two constructs (organisational culture and people) were both found to load into two components. To improve their validity and reliability, it was decided to recalculate these two variables using only those items correlated with the first of the underlying components which were then found to have acceptable levels of reliability and, thus, were used in all subsequent analyses.

5.3 Pearson correlation analysis

As presented in Table 4 (Appendix 4), the results of Pearson product-moment correlations show significant positive correlations between all different components of KM capability, namely culture, structure, people, and IT. In addition, each of these factors was also found to be significantly correlated with CA ($p < 0.01$).

5.4 Multiple linear regression analysis

A standard multiple regression was performed between CA as the dependent variable and structure, culture, people, and IT as independent variables. Table 5 (Appendix 5) indicates that the multiple correlation coefficient (R = 0.58) was significantly different from zero, $F_{(4, 105)} = 13.002$, $p < 0.05$, and 30.6% of the variation in the dependent variable was explained by the set of independent variables (adjusted $R^2 = 0.306$). Both culture, $sr_i^2 = 0.10$, t = 4.04, $p < 0.05$ and IT, $sr_i^2 = 0.03$, t = 2.11, $p < 0.05$ were found to contribute significantly and uniquely to predicting CA while structure and people were found not to provide any significant unique contribution to prediction (t = 0.89 and 0.28 respectively, $p > 0.05$).

6. Findings and discussion

It is stated that the Vietnamese cultural, economic, and political context shapes entrepreneurial business activities and strongly impacts a firm's ability to achieve CA and business success (Swierczek and Ha, 2003; Nguyen, Alam, and Perry, 2007a; Nguyen and Alam, 2007b). Within the scope of this paper, however, focus is directed to examining the internal environment of organisations. This is considered the paper's limitation that will be dealt with in further research. Given that the organisational structure, organizational culture, people, and IT were proposed as potential moderators of the conceptual model, the results of our study reveal that only two factors, namely cultural and technical KM capabilities, have unique and significant influences on a firm's CA. The following empirical evidence from Vietnamese context-based literature supports the findings and explains why this could be the case.

6.1. Organizational culture

One of the key findings of this study is that cultural KM capability makes a unique and significant contribution to a firm's CA. This is quite consistent with the study of Swierczek and Ha (2003) that cultural elements have a strong impact on Vietnamese business innovation and business activities. This argument is further supported by a number of studies showing that potential for entrepreneurial activities and business success can be enhanced by cultural factors in general and organizational culture in particular (Baughn, Cao, Le, Lim, and Neupert, 2006; Deshpande, Farley, and Bowman, 2004).

More specifically, the study of Le, Rowley, Truong, and Warner (2007), attempts to explain why cultural factors are critical to business success in Vietnam. Citing from Mcleod and Dieu (2001) they argue that 'Vietnam has had long exposure to Western values since the French colonization in the 1880s up to the 1950s and the US intervention until 1975' (p114). In addition, more than half the Vietnamese population were born after the Vietnam War who tend to be increasingly influenced by Western values and lifestyles. According to Le et al., (2007), this imprint may sustain a promising potential implication of western-based managerial practices with a selective approach.

Historically, Vietnam has also been strongly affected by Chinese Confucian culture. Though there are many debates on the contradictory roles between Neo Confucianism and Communism, their inter-relationship is recognised as a key distinct feature of business environment in Vietnam. These factors have shaped the organisational culture and can be considered a referencing system that prescribes ethical ways of doing business.

To many young Vietnamese, Confucian culture is values and beliefs while Western lifestyles and management approach are ideal. Given that 49.7% of business owners in Vietnam are young with an average age below 39 years (Pham, 2002), it may imply that Vietnamese entrepreneurs are getting younger and higher educated (79% undergraduate and postgraduate in our study). They are more flexible and willing to change to enhance organisational CA.

It is clear that to improve innovation and competitiveness, Vietnamese enterprises need to incorporate Confucian philosophy, socialist market philosophy and a careful adaptation of new managerial approaches and innovative ideas in accordance with their 'belief reference system' (Mcleod and Dieu, 2001). Cultural factors can positively, or negatively, affect the entrepreneurs' willingness to take risks and make business decisions, while the presence of a risk avoidance attitude would be still prominent if an entrepreneurial culture was not strong (Nguyen et al., 2007a). These explain why the Vietnamese-specific cultural attributes are extremely important to entrepreneurial culture which, in turn, positively influences the KM capability of an organisation and its CA.

6.2 Organizational structure

Although positively and significantly correlated with other organisational factors such as culture, IT, people, and CA (as presented in Table 4), organizational structure does not uniquely and significantly contribute to a firm's CA. This result is supported by Deshpande et al., (2004, p22) claiming that 'Vietnamese firms emerging from central planning to some form of market socialism tend to be bureaucratic'. It means that they tend to focus on loyalty, commitment, regulations and formal organizational structure rather than on future orientation. The result is further supported by Berrell, Wright, and Hoa (1999) who state that due to strong influence by Confucian culture, in comparison to their Australian counterparts, Vietnamese managers were more accepting of hierarchical and formal management structures, placing less emphasis on individual actions and achievement, and being less willing to accept changes.

It is also widely recognised by many Asian and Vietnamese scholars that the adopted Western based managerial practices should be different from the original models due to different business and culture conditions. In addition, they must be implemented gradually and, thus, can limit an organisation's flexibility. As such, this explains why organisational structure, though positively correlated with other factors, may depend heavily on other social KM dimensions and does not give any unique and significant contribution to a firm's CA.

6.3 Human resources

King-Kauanui, Su, and Ashley-Cotleur (2006) indicate that Vietnamese human resource management practices rely more heavily on human labour factor than is found elsewhere. The scholars also acknowledge the importance of culture in forming organizational norms and practices which greatly emphasise collectivism and commitment.

However, contrary to this argument and other scholars' expectations, these current findings show that human KM capability does not contribute uniquely significantly to the prediction of a firm's CA. According to Tuan and Napier (2000) although emphasising collectivism, Vietnamese may not necessarily work as effective teams as generally expected because of a lack of common well-defined goals in group work while encouraging an increasing popularity of pursuing their personal goals.

As presented in Table 4, human KM capability is positively correlated with other KM capability components and, thus, may depend on them, which supports the findings of this study and explains why no significant contribution of human KM resource to organisational CA was found.

6.4 Information technology

According to Le (2006), Vietnamese entrepreneurs' demands for technological innovation are relatively low. The average expenditure of Vietnamese SMEs for this purpose accounts for only 0.2-0.3% of total revenue in comparison with 5% for Indian SMEs or 10% for Korean SMEs. This figure indicates that SMEs are not proving to be able to upgrade their technology and equipment to high levels of technological development.

As found recently by Nguyen et al., (2007a), although facing an urgent need for technological innovation and CA improvement, many private firms in Vietnam do not have the capability to adopt new technology due to an inadequate labour force, inadequate capital and managerial skills. Most private SMEs' equipment and production facilities are based on traditional technologies operated under manual or semi-automatic control or transferred from State-own enterprises (SOE) as well as other domestic sources which are already out of date by two to three or even four technological generations in comparison with regional countries and even with larger Vietnamese companies in the same industry.

The construction industry in Vietnam, though representing by 90% as SMEs (less than 300 employees) as the result of this study, has experienced several distinct characteristics such as a high demand in technology and a fast-speed development to meet ever increasing infrastructure needs and requirements. Moreover, a major part of the industry originated from SOEs (41% as joint stock, joint venture, or fully owned by foreigners, 22 % SOEs, and only 37% private companies as shown in Table 2) who are eligible to the State's policies such as special credit loans, tax incentives, training assistance, support in importing equipment and transferring technologies. They also receive more preferential support from their own governing body and get easier access to resources than private SMEs (Nguyen et al., 2007a). These specific industrial characteristics, plus the emerging private business sector and the fast growing economic boom, have created a more intensive and dynamic competition landscape, requiring firms to upgrade their technological equipment and information systems to acquire and maintain a CA. As a result, the technical KM capability positively and significantly influences the firms' CA.

6.5 Conclusion

This research has developed, operationalised, and empirically validated a theoretical model that explains the inter-relationships amongst KM infrastructure elements and their role in achieving CA in Vietnam, an emerging Asian, less developed country where a Confucian culture, a socialist market economy and a majority of SMEs exist. A survey study of 148 senior executives in the construction industry provides strong support for the research model proposed. Consistent with general agreement in the literature that a combined social and technological approach is ideal, it is contended that there are significant positive correlations amongst the KM capability components as well as between them and organisational CA. However, the findings show that, in the current Vietnamese-specific environment, only two critical factors of cultural and technological KM dimensions make a unique significant contribution to a firm's CA with culture having a major influence. This result highlights the necessity to consider culture as a dominant issue in KM to enhance organisational outcomes.

In terms of practical implications, the paper attempts to provide Vietnamese business executives, especially those from SMEs in the construction industry, with a better understanding about how firms need to be effectively managed to improve their overall KM capability to leverage, exploit, and sustain CA. In addition to consider a combination of technical and social KM resources, practising managers should investigate and take full advantages of IT in relation to

other key organisational factors to overcome cultural barriers and strengthen their contribution to long-term performance.

The limitations suggest that further research needs to be conducted in other sectors to provide a more comprehensive picture of KM in Vietnam. Moreover, an external business environment, especially involving cultural issues, also needs to be investigated systematically to link organisational resources in moving towards a more proactive dynamic approach for long-term strategies.

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Table (1) A summary of empirical studies on knowledge management capability components

Author(s)	Knowledge management enabler/infrastructure	Knowledge management process	Research objective/outcome
Hsu (2006)	- Intellectual capital: • Structure • Human • Innovation	Adapted from Gold et al., (2001)	To examine the links between intellectual capital, knowledge management process capability, organisational effectiveness, and competitive advantage.
Smith (2006)	Adapted from Gold et al.'s (2001) model with an additional construct of Business Strategy		To examine the knowledge management capabilities linked to the business strategy for organisational effectiveness.
Bayyavarapu (2005)	- Knowledge management strategy	N/A	To examine the relationship between knowledge management strategies and firm performance.
Migdadi (2005)	Adapted from Lee and Choi's (2003) model with an additional construct of Transformational Leadership	N/A	To find the relationships among knowledge management components (enablers, knowledge creation process, organisational creativity, and organisational performance).
Zheng (2005)	- Culture - Strategy - Structure	N/A	To measure the impact of structure, culture, and strategy on knowledge management effectiveness and organisational effectiveness.
Chuang (2004)	- Technical knowledge management resource: IT - Social knowledge management resource: • Structure • Culture • People (Adapted from Lee and Choi, 2003)	(Adapted from Gold et at., 2001) N/A	To employ the resource-based theory to develop theoretical links and empirically examine the association between knowledge management capability and competitive advantage.
Harlow (2004)	- Knowledge management strategy: • Tacit • Explicit	N/A	To determine the relationship between knowledge management strategies, firm financial and innovation outcomes.
Manovas (2004)	Adapted from Gold et al.'s (2001) model		To examine the relationship between knowledge management capability & knowledge transfer success.
Choi and Lee (2003)	- Knowledge management styles	N/A	To investigate knowledge management methods and their effect on corporate performance.
Gimenez and Rincon (2003)	- Leadership - Technology - Culture	- Knowledge creation - Knowledge organisation - Knowledge sharing - Knowledge application	To predict what aspects/components of knowledge management would be successful in diverse cultural contexts.
Khalifa and Liu (2003)	- Knowledge management infrastructural capabilities • Leadership • Culture • Knowledge management strategy • Information technology	- Knowledge management process capabilities	To identify the effect of IT, knowledge management infrastructural & process capabilities on knowledge management effectiveness.
Lee and Choi (2003)	- Social perspective: • Structure • Culture • People - Technical perspective: Information technology	- Knowledge creation: • Socialisation • Externalisation • Combination • Internalisation	To find the relationships among knowledge management components (enablers, knowledge creation process, organisational creativity, and organisational performance).
Choi and Lee (2002)	- Knowledge management strategy	- Knowledge creation	To depict the link between knowledge management strategy and knowledge creation process.
Becerra-Fernandez	- Broad and process-oriented tasks		To match different type-oriented tasks with knowledge creation sub-

Author (Year)	Independent variables	Dependent variable	Research aim
and Sabherwal (2001)	- Focused and content-oriented tasks - Broad and content-oriented tasks - Focused and process-oriented tasks	- Knowledge creation	processes and examine their effect on knowledge management satisfaction.
Gold (2001) Gold et al. (2001)	- Technology - Structure - Culture	- Knowledge acquisition - Knowledge conversion - Knowledge application - Knowledge protection	To examine knowledge infrastructure and knowledge process as essential organisational capabilities or preconditions for effective knowledge management and their effect on organisational effectiveness.
Khalifa, Lam and Lee (2001)	- Knowledge management strategy - Technology fit - Culture - Leadership	N/A	To identify the antecedents of knowledge management structure adequacy and the consequence on knowledge management effectiveness.
Bennet and Gabriel (1999)	- Structure - Culture - Size - Environment - Knowledge management method	N/A	To investigate the effect of change-friendly culture on the number of knowledge management methods employed.
Hansen (1999)	- Weak ties - Knowledge characteristics	- Knowledge transfer (percentage of a project's total knowledge that comes from other divisions)	To examine the impact of weak ties and knowledge characteristics on knowledge transfer.
Appleyard (1996)	- Industry and national characteristics	- Knowledge transfer (number of times the respondents provide and receive knowledge in a give period)	To examine the impact of industry & national characteristics on knowledge transfer.
Bierly and Chakrabarti (1996)	- Knowledge management strategy	N/A	To investigate the relationship between knowledge management strategy and performance.
Szulanski (1996)	- Characteristics of the knowledge transferred (source, recipient, and context)	- Knowledge transfer (four-stage transfer process)	To examine the impact of knowledge characteristics on knowledge transfer.
Zander and Kogut (1995)	- Characteristics of social knowledge	- Knowledge transfer (time to transfer)	To examine the effects of knowledge characteristics on the time to transfer.

(Note: The studies are listed in the order of publication year starting with the latest followed by the author's surname in alphabetical order if published in the same year)

<u>Source:</u> Developed for this research by the authors

Appendix 2

Table 2. Descriptive statistics of the usable responses

Variables	Frequency	Percent (%)
Education		
Diploma	31	21
Bachelor	96	65
Master	18	12
Doctoral	3	2
Position		
Senior executive (CEO, MD)	64	43
Functional manager	84	57
Years in current company		
Less than 2 years	54	36
3-5 years	56	38
6-10 years	26	18
More than 10 years	12	8
Number of employees		
Less than 20	18	12
20-49	40	27
50-199	50	34
200-299	25	17
More than 300	15	10
Type of business		
State-owned	33	22
Private Limited	54	37
Joint Stock	36	24
Joint Venture	14	10
100% foreign invested	11	7

Source: Developed for this research

Appendix 3

Table 3. Results of reliability and validity testing

Construct (Cronbach alpha)	Item/Factor Description	PCA Component Loading	PCA Variance extracted	Items deleted
TKMC (IT) (0.691)	*My organisation uses technology that allows …*		53.400%	
	Employees to collaborate with other persons outside the organisation	0.608		
	People in multiple locations to learn as a group from a single source or at a single point in time	0.800		
	People in multiple locations to learn as a group from a multiple source or at multiple points in time	0.861		
	It to map the location (e.g. an individual, specific system, or database) of specific types of knowledge	0.622		
SKMC (0.768)	Organisational Structure	0.810	68.517%	
	Organisational Culture	0.847		
	People (T-shaped skills)	0.826		
Organisational Structure (0.801)	*My organisation ('s) …*		46.154 %	
	Structure facilitates the discovery of new knowledge	0.679		
	Structure facilitates the creation of new knowledge	0.710		
	Bases our performance on knowledge creation	0.560		
	Has a standardised reward system for sharing knowledge	0.631		
	Designs processes to facilitate knowledge exchange across functional boundaries	0.705		
	Managers frequently examine knowledge for errors/mistakes	0.744		
	Structure facilitates the transfer of new knowledge across structural boundaries	0.709		
Organisational Culture (0.780)	*In my organisation …*		60.618%	CI9 CI10
	Employees understand the importance of knowledge to corporate success	0.825		
	High levels of participation are expected in capturing and transferring knowledge	0.802		
	On-the-job training and learning are valued	0.751		
	Senior management clearly supports the role of knowledge in our firm's success	0.734		
People (0.710)	*My organisation's members …*		63.526%	PI1 PI2
	Can communicate well not only with their department members but also with other department members	0.806		
	Are specialists in their own field of expertise	0.816		
	Can perform their own task effectively without regard to environmental changes	0.768		
Competitive Advantage (0.709)	My organisation often uses knowledge-based innovation	0.648	53.926%	
	My organisation's market position can strong barriers to entry for other firms	0.761		
	My organisation uses knowledge management to widen the array of products without increasing costs	0.810		
	The KM capability in my organisation would be difficult and expensive for rivals to duplicate	0.709		

Source: Developed for this study

Appendix 4

Table 4.Correlations between KM capability dimensions and CA

		CA	Structure	Culture	IT	People
CA	Pearson Correlation	1	.474(**)	.543(**)	.363(**)	.452(**)
	Sig. (2-tailed)		.000	.000	.000	.000
	N	140	121	131	131	136
Structure	Pearson Correlation	.474(**)	1	.523(**)	.498(**)	.533(**)
	Sig. (2-tailed)	.000		.000	.000	.000
	N	121	127	122	119	124
Culture	Pearson Correlation	.543(**)	.523(**)	1	.270(**)	.568(**)
	Sig. (2-tailed)	.000	.000		.002	.000
	N	131	122	139	131	135
IT	Pearson Correlation	.363(**)	.498(**)	.270(**)	1	.515(**)
	Sig. (2-tailed)	.000	.000	.002		.000
	N	131	119	131	137	135
People	Pearson Correlation	.452(**)	.533(**)	.568(**)	.515(**)	1
	Sig. (2-tailed)	.000	.000	.000	.000	
	N	136	124	135	135	142

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

<u>Source:</u> Developed for this research

Appendix 5

Table 5. Summary of regression results

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Correlations		
		B	Std. Error	Beta			Zero-order	Partial	Part
1	(Constant)	.628	.661		.949	.345			
	Structure	.107	.121	.094	.885	.378	.420	.086	.071
	Culture	.493	.122	.406	4.041	.000	.518	.367	.323
	People	.031	.111	.028	.282	.779	.359	.027	.022
	IT	.199	.094	.200	2.113	.037	.356	.202	.169

a. Dependent Variable: CA

<u>Source:</u> Developed for this research
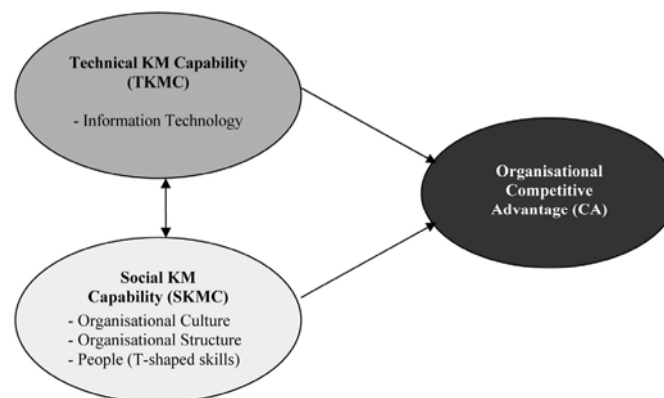
Appendix 1

Figure 1. Theoretical model

Alimentary Expenditure of the Different Socio-Vocational Classes of the Population in Greece (1957-2005): A Description of the Dietary Models

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Abstract

The focus of this paper is on food expenditure in Greece from 1957 to 2005 from a socio-vocational perspective. Our main interest lies in the description of the form and development of the basic alimentary models of the different professional layers of the population. This takes place through the examination of Statistical information presented in the Household Budget Surveys published by the National Statistical Service of Greece. We look at food consumption on the grounds of professional criteria (directors vs. workers for example); and of the workers' place in the workforce (employers, employees, unemployed, etc.). By considering the fundamental changes in alimentary patterns in post war Greece we attempt to comprehend the respective dietary behaviours and the ways different professional layers brought about the associated changes over time.

JEL Classification: E21, Q11, M31

Keywords: Socio - vocational variables, Consumption, Dietary models

1. Introduction

With the exception of one study (Karapostolis 1983) very little mention is made in the academic literature on the effects socio-vocational attributes of the population have on food consumption in post-war Greece. A qualitative description and analysis of the alimentary consumption of the different professional categories take place here. These attempts highlight the similarities, differences, convergence and divergence existing among the socio-vocational classes both in the same time period and over time. In that manner we manage a more complete description of the examined alimentation patterns by stressing existing particularities, the extent and intensity of observed behaviours, and the vocational classes that lead and/or follow the introduction of those alimentary consumption changes. By doing so we set the grounds for understanding the causes that formulated the specific food consumption patterns and their redevelopment over time.

Sources of data for our study were the official annual Household Budget Surveys conducted by the National Statistical Service of Greece (ESYE) over a fifty year period.

2. Methods

In the contemporary era food is not a simple product with nutritious value but is represented by "complete packages with specific attributes" (Lancaster 1966, Georgakopoulos and Thomson 2005, Georgakopoulos *et al.* 2006, Georgakopoulos *et al.* 2008). In addition food consumption is taking place in a constantly changing socio-economic

environment (Deaton 1992) in societies with many different classes. In this context knowledge advancement in consumption behaviour can only take place through the application of novel research perceptions and methods.

Behavioural analysis of demographic classes without being unknown to researchers has not been the main focus of scientific investigation. Diversity in behaviours has been identified in socio-economic classes (Karapostolis 1983). However its importance in alimentary consumption changes has not been acknowledged yet. This is due to some classes leading those changes while others follow those or persist with more traditional dietary models of consumption (Sotiropoulos and Mygdakos 2004a, b, 2005, Sotiropoulos *et al.* 2006).

Analysis usually focuses on description of statistical information provided by Statistical Services without additional data treatment. A relatively new method (Sotiropoulos *et al.* 2010, Sotiropoulos and Frangos 2009) examines the natural characteristics of alimentary consumption (plant and/or animal-based consumption), the technical features of the production process (agricultural/industrial), biological features and health aspects. The latter parameter is of particular importance since increased animal-based food product consumption appears to have led to increased heart disease incidents. There seems to be an entanglement between natural and biological characteristics of the alimentary models. In this light a more holistic examination of alimentation is in need. A similar relationship seems to exist between technical features and biological aspects of the dietary patterns (e.g. cases of cancer and other health problems – see Sotiropoulos and Demoussis 2002).

The current paper attempts to examine the role different vocational layers of the population have played in changing the alimentary behaviour in Greece over time. Emphasis is given on normal and extreme alimentary behaviours. However, more details on these latter aspects will be given in subsequent work.

Sotiropoulos and Frangos (2009) give the basic qualitative interrelation that was used here to describe the alimentary models:

$$CM_d = (Ch_n, Ch_t) \tag{1}$$

where:

CM_d = Description of the consumption pattern

Ch_n = Natural features

Ch_t = Technical features

The above can be rewritten as::

$$Q_{alimentary\ pattern} = (Q_{natural\ characteristics}, Q_{technical\ characteristics}, Q_{biological\ characteristics}) \tag{2}$$

and further expanded to:

$$Q_{alimentary\ pattern} = (Q_{plant\ components}, Q_{animal\ components}, Q_{agricultural\ components}, Q_{industrial\ components}, Q_{biological\ components}) \tag{3}$$

Our data analysis was based on a statistical description of the data disclosed in the annual Household Budget Surveys over the fifty year reference period with the usage of spreadsheets (see ESYE several years and in specific: 1957/58, 1963/64, 1974, 1981/82, 1987/88, 1993/94, 1998/99, 2004/05).

3. Alimentary patterns in Greece from 1957 to 2005

Patterns of alimentary consumption in Greece changed radically in the post-war period. In the 50s alimentation was based on the traditional "Mediterranean" model. Half a century later it can be characterised as "industrial – international – Western origin" (Sotiropoulos and Demoussis 2002).

The main food expenditure in the Mediterranean models of alimentation was on rural, plant-based products and it was taking place within the household (see table 1 and Sotiropoulos *et al*. 2010). In the industrial category, expenditure is taking place "away from home", on industrial food and animal-based tertiary products (in the 80s and 90s) that incorporate the costs of service provision (trading, marketing, and financing).

Traditional Mediterranean alimentation was grounded on: the triptych "bread – wine – olive oil"; the social dimension of food consumption within the patriarchal household with the participation of friends and relations; and the long and increasing duration of meals in conjunction with public holidays, anniversaries and other social events. Food consumption was based on bread, legumes, sheep and goat meat. The latter also had cultural and/or religious dimensions [1].

In west and north Europe and North America on the other hand alimentation is based on greasier foods of animal origin (beef, fat, milk, beer, whisky, potatoes, etc.). Bread consumption is very limited, wine and olive oil almost non - existent, industrial delivery of products and food processing are very important. Other features refer to intense agricultural inputs and fast-food mentalities to a smaller extent.

These are two completely different civilisations with particular cultural symbols and values. In table 1 a synopsis of the development of the alimentary models in Greece can be seen from 1957 to 2005; from the Mediterranean tradition of the 50s, to the industrial consumption of animal based food in the 70s and 80s, to the contemporary post industrial era of food consumption away from home (Sotiropoulos *et al.* 2010).

4. Alimentary Consumption of the Different Vocational Layers of the Population.

4.1 Alimentary Consumption of the Higher Vocational Layers.

In the 1950s higher vocational classes (directors, employers) of the population in Greece had already started to adopt "western – international" dietary behaviours. This when the majority of the Greek society was adhering to the Mediterranean alimentation model (see tables 4.1.1 and 4.1.2). There was an increased consumption in industrial (processed) food products, meat and expenditure away from home. On the other hand cereal and other rural products' consumption was decreasing.

From the 70s onwards the rest of the Greek society follows these trends. Cereal consumption gradually decreases but at slightly lower rates than those of the higher vocational layers.

In meat consumption higher vocational layers lead the new behaviours. The rest of the population follows this increased consumption trend (till the 80s) and the subsequent decrease with a small time lag.

A similar observation with a stronger trend was made for the category of food expenditure away from home. There is a rapid convergence of behaviours. However fluctuations are observed throughout the reference period. Past the mid 90s there is an even greater expenditure on alimentation away from home from the higher vocational layers in relation to the mean position of the population.

Differences in behaviours were also observed within the higher vocational layer category. Specifically employers: a) have a greater expenditure on alimentation away from home than directors do in the 70s, even though this was much smaller in the Mediterranean model; b) expenditure on cereals was and remained at higher levels; c) meat consumption increased initially and then decreased in the 90s.

All other food expenditure categories for higher income earners follow the mean position of the population. However there are some worth noticing differences. Similarities refer to a gradual decrease of expenditure on vegetable, fruit, fish, oils, and sugar-based products over time. The only exception is that of non-alcoholic beverages where consumption increases. Expenditure on fish, dairy, fruits, and sugar-based products was always larger for directors than it was for employers in general. On oils and non-alcoholic beverages it was always greater for employers. The same observation applies for the vegetable food category after the 80s. Food expenditure for directors is slightly greater than the corresponding one for employers.

By comparing the food consumption of the leading categories with the mean position of the population, conclusions can be drawn for the longer term alimentary trends in dietary behaviour in Greece. Cereals have stabilised at the lowest consumption levels of the examined period with minor fluctuations. These are not that important after the 70s. In meat consumption the large increases of the 70s and 80s were followed by slowly decreasing trends. The same applies at a more intense pace for the fat and oil, and fruit categories. For vegetables, and sugar-based products these falling trends are much smaller. However for the latter category slightly increasing trends were observed in the latest Household Budget Survey. Finally, expenditure on food away from home and on alcoholic beverages has a strong ascending dynamic both for the higher income earning layers and the mean position of the population.

4.2 Alimentary Consumption of the Lower Vocational Layers.

An analysis on economic criteria of the alimentary differences existing between different layers of the population (Sotiropoulos *et al.* 2009) shows that the associated differences not only persist but intensify over time. In contrast, a similar examination on socio-vocational dimensions implies that such alimentary differences start to dull after the 1970s. All vocational classes appear to have similar food consumption behaviours (see tables 4.2.1, 4.2.2, 4.2.3.). They substitute plant-based food with animal-based products, increase consumption of industrial-processed food, increase expenditure on food away from home. Differences are noted on the actual consumed quantities and on the adoption lag existing between the lower and the higher vocational categories.

The adoption lag of the modern food consumption behaviours (animal-based and industrial-processed products, expenditure away from home) has to do with the higher vocational layers initially embracing the new trends. This is gradually followed (after the Household Budget Survey of 1974) by the lower professional classes. Differences on the consumed quantities appear to exist due to the increased levels of spending higher vocational classes have in the associated alimentary categories.

In more detail, cereal consumption for workers was proportionately greater than the mean national position, and much greater than what it was for the higher socio-vocational layers. Workers also follow the general trends on meat consumption. However they consume much less compared to what the higher professional classes do and their position

is close to the mean national consumption. Workers' expenditure on food away from home is significantly lagging that of directors and employers and it is much smaller than the national mean position but still noteworthy. The consumption trends of the remaining working classes are similar to the mean national position. Fish, dairy, and fruits, are at reduced consumption levels with variations. Oil, vegetable, and sugar-based product consumption is continuously decreasing without any variations. In contrast non-alcoholic beverage spending is continuously increasing at a rapid pace especially in later years.

In summation if compared with the higher professional layers, workers seem to prefer cereal, oil and grease, vegetable and non alcoholic beverage consumption. They significantly lag in expenditure away from home and at a lesser degree in fish, sugar-based product, dairy and fruit spending. They demonstrate a more traditional "Mediterranean" dietary behaviour despite their convergence with the consumption habits of the higher socio-vocational layers. Similar conclusions can be drawn for the remaining lower socio-vocational classes (i.e. unemployed, farmers, employees) with variations on the quantitative characteristics of the associated food consumption. Wage earners for example demonstrate reduced traditional behaviours with increased expenditure in food away from home, sugar-based products, fruits and very little on dairy products.

Conclusions on the alimentary behaviour of the "unemployed or first job seeker" category can only be tentative [2]. However the dietary behaviour of this group can be utilised as the basis for comparisons since the majority of the working force here are unemployed. Proportionate expenditure on food away from home in the unemployed category is much less than what it is for workers. A similar picture appears to exist on expenditure on cereal and oil (with the exception of the Household Budget Surveys for 1988/89 and 2004/05) and non-alcoholic beverages (with the exception of Household Budget Surveys for 1957/58 and 1963/64). On the contrary expenditure for meat, fish, dairy, vegetable, fruit and sugar-based products is greater for this group than what it is for the workers.

5. Internationalisation, Industrialisation and Alimentary Services

The examination of dietary consumption of different socio-vocational classes in Greece, using technical criteria of the production process (rural/industrial food products - see Sotiropoulos and Demoussis 2002, and Sotiropoulos *et al.* 2010), brings forward the industrial/international character of alimentary behaviour (see table 5.1.). This is a constant feature in the conduct of the higher socio-vocational layers of the population and spreads to all other professional categories over time. This feature can be studied through an examination of the consumption structure of animal-based (beef) and international origin products [3].

This industrialisation of the dietary models of consumption is observed in all alimentary categories. For meatstuff this happened for both fresh and processed products [4]. The latter were almost non-existent in the 60s. However their consumption expanded significantly in all socio-vocational groupings over the examined period.   At the end of the period relatively lower quantities of processed meat were consumed only by the unemployed. Those who led their introduction initially were the Directors. All other socio-vocational groups started from lower consumption levels but they increased their spending significantly over time at the level of the Directors. In this manner a homogenisation took place in the demand for processed meat products over time.

A similar observation can be made for industrial/processed vegetables. These appeared for the first time in the Greek market after 1969 (with the exception of tomatopaste that was always present at very low levels). The proportionate participation of industrial vegetables in alimentation is even more impressive than the corresponding one for meatstuff. This reaches almost 50% for cereals (even though the latters' starting point was much higher). Again the higher socio-vocational classes lead this behaviour. However workers also appear to have an increased participation in this diet even though in the beginning of the examined period and in the 60s they were spending more on traditional types of cereals (rural-based such as wheat, maize, flour and rice).

The drastic decrease of legume consumption also denotes the gradual loss of the traditional features of alimentation and their subsequent internationalisation/industrialisation. This can be seen both from the increase of industrial (western origin) food participation in alimentation but also from the adoption of whole food categories of imported products (e.g. bananas after the 1990s). Veal consumption is a typical example of this with a significant proportionate increase in its consumption (led again by the higher socio-vocational classes), whereas expenditure on traditional lamb and kid meat fell drastically.

Spending on alimentation away from home is led by the higher vocational groups and it is followed by the lower classes with relatively smaller proportionate participation [5] (see Household Budget Survey of 1974 and subsequent ones). Of particular interest are the spatial preferences where vocational classes undertake this expenditure (see table 5.2). Lower socio-vocational groups remain attached to traditional cafes (kafenia), whereas higher classes prefer restaurants. The general trend however is for traditional cafes to lose ground. This behaviour is again led by the higher vocational categories and especially the Directors.

6. Results

Two general categories of alimentary behaviour could be formed if vocational criteria are considered. The first would consist (according to definitions from the Household Budget Surveys) of directors, self employed, scientists, private and public sector employees, tradesmen-salespeople, and those occupied in the provision of other services. The second category would include craftsmen, workers, farmers-animal breeders, «non-working people» (such as: occasionally occupied workers; other-revenue earners – landowners for example, and others – see Karapostolis 1983), and unemployed.

The first category is the one that introduces the "modern" dietary behaviours (meat-based consumption, alimentary expenditure away from home, consumption of industrial/processed and international origin food products). The second category is the more "traditional" one that adopts the previous behaviours later and spends relatively smaller amounts on related products and services. In relation to this the more obvious differences in the alimentation of the two categories are on cereal (smaller consumption by the higher vocational classes), meat (greater proportionate participation for the higher classes until the Household Budget Survey of 1981/82, and smaller since), processed food, and expenditure away from home (greater consumption in the higher vocational category). At the same time categorically specific attributes seem to exist among specific classes (these can be vocational-based or not). For example: in the expenditure away from home for self employed and tradesmen-salesmen; in fish and cereal consumption of farmers-animal breeders-fishermen; in the increased consumption in earlier years of sugar-based products for the higher socio-vocational classes and its subsequent decrease; and others. These developments become even more important if existing large differences in total amounts, percentages, and the relative relations between different professions of the population are taken into consideration (see tables 6a,b)

In accordance to Engel's law "*increases in disposable income lead to decreases in expenditure on food*" (as quoted by Herpin-Verger 2000). This observation applies for all socio-vocational layers in our study. During the 50s major expenditure on alimentation was taking place by the working classes with Directors having the least proportionately. On the other hand in the Household Budget Survey of 2004/05 unemployed groups spend most of their disposable income on food. Directors were again spending the least part. At the general population level expenditure on alimentation has also significantly decreased proportionately. During the 50s the associated costs were half of total expenditure approximately. At the end of the examined period this has decreased to a quarter of the total expenditure with the exception of the directors. The latter's respective costs fell from a quarter of their total expenditure in the 50s to $\frac{1}{5}$. A similar picture is drawn for the employer category whose costs fell from $\frac{1}{3}$ (in the 50s) to $\frac{1}{5}$ at the end of the examined period (Household Budget Survey of 2004/05).

7. Conclusions

The examination of alimentary consumption in post-war Greece using socio-vocational criteria demonstrates the changeable nature of dietary behaviour both: a) over time (1957 – 2995); and b) within the identified vocational layers of the population:

During the first postwar period alimentary models in Greece were characterised by the traditional Mediterranean diet. These were common across the Mediterranean area and especially in Greece with a history of some 5000 years (Renaud 1995). Half a century later they have been completely substituted by the new industrial, western-origin, models with their incorporated service value addition. In the traditional Mediterranean diet food consumption was taking place in the household with plant-based, rural products. In the industrial era alimentation originates from North America and/or Western Europe and it is based on industrial-processed, away from home, meat-based (in the 80s and 90s) and plant-based food (thereafter), but also on value addition through the services of the tertiary sector (trade, finance, advertising).

Since the end of the 50s (in accordance to statistical information provided by ESYE) several economic layers of the population start differentiating their dietary patterns (directors, self-employed professionals, employers and higher income earning layers in general, and younger people – see Sotiropoulos and Demousis, 2002). These are followed relatively quickly by other layers of the population which adopt at a greater or lesser extent and at different rates and priorities the formers' dietary behaviour. These social groups gradually detached from the traditional dietary norms and fully adopted the contemporary trends which in turn they became the models of alimentary consumption for the contemporary Greek society.

The persistent nature of alimentary behaviour is an important reason for a more specialised and in-depth study of the social phenomenon examined here. This research should be extended both in the areas of description and interpretation. The applications of the interrelationships (1), (2) and (3) presented earlier could prove useful towards achieving this goal through the understanding of the causes and mechanisms that bring about change in countries with traditional dietary behaviours such in the case of Greece.

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Notes

Note 1. Sacrifices of sheep to the old gods of the southern Mediterranean cultures; the Holy Communion with wine; biblical references to lamb and kid representing good and bad Christians respectively; the characterisation of ancient Greeks as bread eaters (see for example Montanari 1993).

Note 2. The "unemployed or first job seeker" category also includes part time employees and other rent earners (Karapostolis 1983).

Note 3. Including animal and/or plant-based products such as: processed meat; homogenised dairy products; imported fruits (e.g. bananas); industrial/processed cereals; processed vegetables and others.

Note 4. Industrialisation here started with the introduction of freezing techniques and general refrigerator usage which was the main driver for the subsequent consumption increase of fresh meat and milk.

Note 5. A similar picture was observed in the 50s – 70s with animal-based and processed food.

Table 1. Alimentary Pattern Structure: 1957-2005, (%).

	EOP	*´57/58*	*´63/64*	*1974*	*´81/82*	*´87/88*	*´93/94*	*´98/99*	*´04/05*
1	*Cereal*	*15.6*	*16.9*	*9.7*	*8.6*	*8.8*	*10.0*	*8.7*	*8.6*
2	*Meat*	*16.1*	*14.6*	*25.9*	*26.7*	*23.2*	*20.2*	*15.1*	*14.4*
3	*Fish*	*5.3*	*6.5*	*4.5*	*5.0*	*4.7*	*5.0*	*5.1*	*5.4*
4	*Vegetable/Olive Oil*	*11.1*	*10.2*	*8.5*	*6.6*	*4.8*	*4.2*	*3.5*	*3.6*
5	*Dairy Products*	*12.1*	*8.1*	*11.6*	*11.9*	*12.6*	*13.0*	*12.0*	*12.0*
6	*Vegetables*	*10.0*	*8.8*	*9.9*	*8.8*	*8.2*	*8.4*	*8.1*	*7.5*
7	*Fruits*	*8.0*	*5.1*	*7.9*	*7.1*	*7.6*	*6.3*	*5.4*	*4.9*
8	*Sugar and pastry making products*	*6.4*	*8.3*	*6.8*	*4.8*	*5.3*	*4.7*	*4.0*	*4.2*
9	*Other food categories*	*0.9*	*1.1*	*1.3*	*0.6*	*0.9*	*0.9*	*0.6*	*0.9*
10	*Expenditure on food away from home*	*12.3*	*12.8*	*8.9*	*17.4*	*21.1*	*24.4*	*33.7*	*34.7*
11	*Non alcoholic drinks**	*2.1*	*7.6*	*5.0*	*2.3*	*2.8*	*3.0*	*3.7*	*3.7*
	Total of Dietary Expenditure	*100*	*100*	*100*	*100*	*100*	*100*	*100*	*100*

* Non alcoholic drinks and ice-creams in EOP of 1957/58.

Data Source: ESYE (several years: EOP ´57/58, ´63/64, ´74, ´81/82, ´87/88, ´93/94, ´98/99, ´04/05).

Table 4.1.1. Alimentary Consumption of the Higher Vocational Classes of the Population (Directors, etc.), 1957 to 2005, (%).

	EOP	*´57/58*	*´63/64*	*1974*	*´81/82*	*´87/88*	*´93/94*	*´98/99*	*´04/05*
	Alimentary Categories	*100*	*100*	*100*	*100*	*100*	*100*	*100*	*100*
1	*Cereal*	*10.4*	*10.5*	*6.0*	*6.3*	*7.0*	*8.2*	*6.7*	*7.1*
2	*Meat*	*18.7*	*12.3*	*26.9*	*24.9*	*20.3*	*19.6*	*13.2*	*13.7*
3	*Fish*	*7.1*	*7.5*	*4.4*	*5.3*	*4.2*	*5.2*	*6.6*	*5.0*
4	*Vegetable / Olive Oil*	*6.7*	*2.0*	*3.4*	*4.2*	*3.7*	*3.8*	*2.7*	*2.2*
5	*Dairy Products*	*12.6*	*10.8*	*12.4*	*12.6*	*11.8*	*12.7*	*11.0*	*10.5*
6	*Vegetables*	*19.5**	*4.8*	*8.3*	*6.9*	*7.0*	*6.8*	*6.5*	*6.5*
7	*Fruits*		*4.4*	*9.1*	*8.8*	*7.7*	*6.5*	*5.2*	*4.5*
8	*Sugar and pastry making products*	*4.7*	*8.7*	*7.3*	*6.9*	*5.8*	*4.6*	*3.5*	*4.3*
9	*Expenditure on food away from home*	*20.4***	*37.1*	*19.0*	*21.4*	*29.3*	*29.0*	*40.6*	*41.4*
10	*Non alcoholic drinks*		*1.2*	*1.5*	*1.0*	*1.6*	*1.9*	*2.0*	*3.7*
11	*Other food*		*0.5*	*1.7*	*1.7*	*1.8*	*1.7*	*1.8*	*1.1*

Note for tables 4.1.1, 4.1.2, 4.2.1, 4.2.2, 4.2.3.

(*) EOP 1957/58: Fruits are also included in "Vegetables".

(**) EOP 1957/58: Non Alcoholic Drinks and Other food are also included in Expenditure Away From Home.

Data Sourse: ESYE (several years: EOP 1957/58, 1963/64, 1974, 1981/82, 1987/88, 1993/94, 1998/99, 2004/05)

Table 4.1.2. Alimentary Consumption of the Higher Vocational Classes of the Population (Employers), 1957 to 2005, (%)

	EOP	'57/58	'63/64	1974	'81/82	'87/88	'93/94	'98/99	'04/05
	Alimentary Categories	100	100	100	100	100	100	100	100
1	Cereal	12.6	12.9	7.6	7.2	6.9	7.9	7.2	7.0
2	Meat	17.9	19.9	27.4	25.5	21.5	18.6	13.2	12.2
3	Fish	6.3	7.3	4.2	4.8	5.0	5.0	5.7	4.8
4	Vegetable / Olive Oil	8.0	7.7	7.2	4.4	3.4	3.1	2.8	2.4
5	Dairy Products	11.6	9.3	11.7	11.3	11.4	11.8	10.6	10.2
6	Vegetables	18.1	8.2	8.3	7.5	5.9	6.5	6.8	6.0
7	Fruits		5.9	8.1	7.5	7.4	5.8	5.0	4.3
8	Sugar and pastry making products	5.7	10.0	7.2	5.2	5.2	4.3	3.5	3.7
9	Expenditure on food away from home	19.7	16.6	14.2	24.0	29.9	33.3	41.1	45.0
10	Non alcoholic drinks		1.4	1.8	0.9	1.7	2.0	2.2	3.5
11	Other food		0.9	2.3	1.7	1.7	1.6	1.9	0.9

Data Sourse: ESYE (several years: EOP 1957/58, 1963/64, 1974, 1981/82, 1987/88, 1993/94, 1998/99, 2004/05)

Table 4.2.1. Alimentary Consumption of the Lower Vocational Layers (Workers), 1957 to 2005, (%)

	EOP	'57/58	'63/64	1974	'81/82	'87/88	'93/94	'98/99	'04/05
	Alimentary Categories	100	100	100	100	100	100	100	100
1	Cereal	18.0	18.6	9.7	8.8	8.7	10.5	9.6	9.1
2	Meat	14.7	15.8	25.8	27.2	24.8	22.0	15.9	14.9
3	Fish	5.1	7.1	4.0	4.3	4.1	4.4	4.2	4.6
4	Vegetable / Olive Oil	11.9	9.9	9.0	6.0	4.6	4.3	3.9	3.6
5	Dairy Products	12.3	10.4	12.4	12.5	13.0	13.4	12.5	12.3
6	Vegetables	17.8*	10.0	10.4	9.2	8.3	8.4	8.2	7.5
7	Fruits		5.7	7.9	6.9	7.2	6.0	5.1	4.6
8	Sugar and pastry making products	5.9	7.6	6.4	4.8	5.3	4.7	4.1	4.1
9	Expenditure on food away from home	14.3**	12.4	10.6	17.5	19.9	22.0	31.6	33.9
10	Non alcoholic drinks		1.4	1.5	0.9	1.7	2.1	2.8	4.2
11	Other food		1.0	2.5	1.9	2.3	2.1	2.1	1.1

(***)EOP of 1957/58 and of 1963/64 includes "workers in manufacturing sectors". They do not include "workers in transportation and communication sectors".

Data Source: ESYE (several years: EOP 1957/58, 1963/64, 1974, 1981/82, 1987/88, 1993/94, 1998/99, 2004/05)

Table 4.2.2. Alimentary Consumption of the Lower Vocational Layers (Unemployed or First Job Seekers****), 1957 to 2005, (%)

	EOP:	'57/58	'63/64	1974	'81/82	'87/88	'93/94	'98/99	'04/05
	Alimentary Categories	100	100	100	100	100	100	100	100
1	Cereal	14.4	18.6	9.8	9.0	9.2	10.5	9.1	9.0
2	Meat	16.2	15.7	25.6	27.5	23.1	20.2	16.5	15.3
3	Fish	5.7	6.5	4.6	5.6	5.4	5.5	6.2	6.3
4	Vegetable / Olive Oil	11.8	9.4	8.6	7.1	5.7	5.7	4.7	4.5
5	Dairy Products	13.0	11.7	12.0	12.1	13.6	13.6	12.7	12.5
6	Vegetables	19.2	9.8	10.5	9.2	9.5	9.6	9.4	8.9
7	Fruits		6.1	8.4	7.8	8.5	6.7	6.1	5.6
8	Sugar and pastry making products	7.3	8.3	6.8	4.3	4.7	4.2	4.0	4.2
9	Expenditure on food away from home	12.4	11.0	9.6	14.4	16.9	20.5	27.1	29.4
10	Non alcoholic drinks		1.9	1.6	0.9	1.4	1.7	2.0	3.4
11	Other food		1.1	2.4	2.1	2.0	1.7	2.1	0.8

(****)EOP of 1957/58 and 1963/64 includes "Non professional workers"

Data Source: ESYE (several years: EOP 1957/58, 1963/64, 1974, 1981/82, 1987/88, 1993/94, 1998/99, 2004/05)

Table 4.2.3. Alimentary Consumption of the Lower Vocational Layers (Wage Earners), 1957 to 2005, (%).

	EOP:	'57/58	'63/64	1974	'81/82	'87/88	'93/94	'98/99	'04/05
	Alimentary Categories	100	100	100	100	100	100	100	100
1	Cereal	16.1	17.7	9.2	8.4	8.6	9.7	8.4	8.4
2	Meat	15.5	14.7	25.9	26.5	23.3	20.2	14.1	14.0
3	Fish	5.0	6.4	4.1	4.5	4.2	4.4	4.4	4.7
4	Vegetable / Olive Oil	11.8	10.8	8.0	6.6	4.4	3.9	3.2	3.1
5	Dairy Products	12.7	10.5	12.4	12.9	13.3	13.4	12.1	12.3
6	Vegetables	18.1	9.2	10.1	8.9	8.1	7.7	7.2	6.8
7	Fruits		5.8	8.2	7.3	7.8	6.2	5.1	4.6
8	Sugar and pastry making products	6.4	7.9	6.7	5.2	5.5	5.1	4.2	4.3
9	Expenditure on food away from home	14.5	14.6	11.1	16.8	20.7	25.1	36.7	36.6
10	Non alcoholic drinks		1.4	1.5	1.0	1.7	2.2	2.6	4.1
11	Other food		1.0	2.8	1.9	2.3	2.1	2.0	1.0

Data Source: ESYE (several years: EOP 1957/58, 1963/64, 1974, 1981/82, 1987/88, 1993/94, 1998/99, 2004/05)

Table 5.1. Structure of Basic Product Consumption of the Lower and Higher Vocational Classes, EOP 1963/64 and 2004/05, (%).

	Higher Socio-Vocational Classes		Lower Socio-Vocational Classes		Higher Vocational Classes		Lower Vocational Classes	
	Employers	*Employers**	*Unemployed*	*Non Workers*	*Directors*	*Directors*	*Workers*	*Workers*
EOP:	*'63/64***	*'04/05*	*'63/64*	*'04/05*	*'63/64*	*'04/05*	*'63/64*	*'04/05*
Cereal								
Bread	34.5	45.9	35.5	52.4	55.5	47.6	39.2	54.8
Flour	24.2	3.5	23.8	4.7	13.8	3.5	13.1	3.3
Processed Cereal	21.7	45.1	19.9	36.4	15.6	42.9	15.6	36.1
Rice	9.7	5.5	11.5	6.5	15.1	5.9	8.1	5.7
other Cereal***	10.0		9.3				24.1	
Meat								
Veal	33.5	39.4	15.4	23.2	13.9	40.6	17.5	35.8
Lamb and Kid	28.2	9.5	28.8	15.0	23.4	10.6	20.7	9.8
Processed Meat Products	3.0	15.0	2.1	8.6	7.2	14.3	4.3	15.0
Legumes - Vegetables								
Legumes	21.5	5.1	17.1	7.4	15.3	7.9	18.8	5.7
Fresh Vegetables****	56.6	76.6	62.6	61.1	72.5	52.8	59.0	55.6
Processed Vegetables		14.6		13.2		16.3		15.8
Fruits								
Bananas		10.9		9.0		10.6		13.2
Dairy								
Fresh Milk	18.9	26.3	16.8	24.5	20.7	27.0	18.5	28.6
Processed Milk	15.3	7.8	12.0	7.3	26.7	7.9	17.4	9.9
Oils-Fat								
Butter	2.7	4.1	1.2	3.1	12.1	4.8	3.2	3.3

(*)   In EOP of 2004/05: «Self employed with hired personnel»

(**)   Data from EOP of 1963/64 were used since detailed data per product from the EOP of 1957/58 did not exist for these population categories   .

(***)   (Wheat, maize,etc.)

(****) (Including tomato paste) in EOP of 1957/58.

Data Source: ESYE (several years: EOP 1957/58, 1963/64, 1974, 1981/82, 1987/88, 1993/94, 1998/99, 2004/05)

Table 5.2. Structure of Alimentary Expenditure Away From Home in Lower and Higher Socio-Vocational Classes (EOP 1963/64 & 2004/05 in %).

	Higher Socio-Vocational Classes		Lower Socio-Vocational Classes		Higher Vocational Classes		Lower Vocational Classes	
	Employers	*Employers**	*Unemployed.*	*Unemployed.*	*Directors*	*Directors*	*Workers*	*Workers*
EOP:	*'63/64***	*'04/05*	*'63/64*	*'04/05*	*'63/64*	*'04/05*	*'63/64*	*'04/05*
Expenditure Away From Home								
Restaurants	41.2	57.0	31.6	49.5	50.9	55.1	32.5	46.5
Kafenia	58.8	43.0	68.4	50.5	49.1	44.9	67.5	53.5

(*)   In EOP of 2004/05 also include «Self employed with hired personnel»

(**)   Data from EOP 1963/64 were used since detailed data per product from EOP 1957/58 did not exist for these population categories.

Data Source: ESYE (several years: EOP 1957/58, 1963/64, 1974, 1981/82, 1987/88, 1993/94, 1998/99, 2004/05)

Table 6a,b. Alimentary Consumption, in Drachmas and Proportionate Relations (%) per Household Budget Survey: Vocational Criteria.

EOP ´57/58	*I**	*II*	*III*	*IV*	*V*	*VI*	*VII*	*VIII*	*IX*
Alimentation (in Drachmas)	*349.9*	*525*	*557.1*	*420.7*	*366.1*	*266.6*	*409.4*	*349.2*	*296.8*
Total Expenditure (in Drachmas)	*861.6*	*1,698.7*	*2,080.1*	*1,069.1*	*932.5*	*656.3*	*868.3*	*859.8*	*750.6*
Alimentation/Expenditure (%)	*40.6*	*30.9*	*26.8*	*39.4*	*39.3*	*40.6*	*47.1*	*40.6*	*39.5*

EOP ´04/05 **	*I**	*II*	*III*	*IV*	*V*	*VI*	*VII*	*VIII*	*IX*
Total Expenditure (€)	*1,792.28*	*2,971.96*	*3,191.88*	*2,430.85*	*2,246.02*	*1,689.38*	*1,982.0*	*3,214.88*	*1,258.02*
Alimentation (€)	*469.35*	*671.56*	*715.64*	*570.79*	*559.99*	*483.51*	*529.61*	*765.37*	*363.34*
Alimentation/Expenditure (%)	*26.2*	*22.6*	*22.4*	*23.5*	*24.9*	*28.6*	*26.7*	*23.8*	*28.9*

   * I: All households

   II: Free lancers, technicians, etc..

   III: Directors and Executives

   IV: Office employees

   V: Salespeople (Categorised as Tradesmen or salesmen after the EOP of 1974)

   VI: Farmers,fishermen,etc. (Categorised as farmers, animal-breeders, fishermen, etc. after the EOP of 1974.)

   VII: Workers (excluding agriculture) or drivers of public transport

   VIII: Self employed

      IX: Workers in non specific professions (Categorised as non-working or employment seekers after the EOP of 1974)

** No additional vocational categories are mentioned that existed in EOP of 1957/58 with alimentation over total consumption percentage: 54.8%

Data Source: ESYE (several years: EOP 1957/58, 1963/64, 1974, 1981/82, 1987/88, 1993/94, 1998/99, 2004/05)

A Study of Corporate Reputation's Influence on Customer Loyalty Based on PLS-SEM Model

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Abstract

In this paper, a comprehensive corporate reputation measurement and explanation model suggested by Schwaiger was briefly introduced in the first part. Since the model's applicability in China has been proved in former work, using structural equation modeling (SEM) and partial least squares (PLS) statistical methods and taking advantage of first-hand data, the impact of corporate reputation on customer loyalty was empirically studied in the second part of this paper. Statistical results indicate that the affective component (Likeability) of corporate reputation exerts greater and more significant influence on the establishment of customer loyalty than the cognitive component (competency) does. Furthermore, performance and corporate social responsibility (CSR) were identified to be the most two important drivers in influencing corporate reputation and also in driving customer loyalty.

Keywords: Corporate Reputation, Customer Loyalty, Structural Equation Modeling, Partial Least Squares (PLS), JEL Classification: M31, M10; M14

As one of the valuable corporate intangible assets, corporate reputation has received unprecedented attention from both academics and business community. However, a piece of successful experience in corporate reputation management in one country or area could hardly been replicated in another place due to its culture and environment-dependent characteristic, thus good corporate reputation is of great importance in corporate core competence.

Corporate behaviors and corporate social responsibilities has been always the central point of corporate reputation. Therefore if corporate reputation exerts impact on customer loyalty and if yes, what is the interaction mechanism between them has been an interesting and meaningful research topic. Some scholars think that on one hand good corporate reputation benefit the company from attracting potential customers, saving the time for establishing business relationship with customers, reducing the transaction cost and create premium revenue; on the other hand good corporate reputation could promote the sales of new production and help developing new markets. Excellent corporate reputation could save the cost of establishing trust with new customers and help improve transaction efficiency (Xu jinfa, 2005).

With improving environment of market economy, consumers could get more information about the company and product in increasing ways, which consequently result in more and more critical purchasing behavior. Under this situation, how to attract customers and further establish customer loyalty has been an ever-fierce competition. During the competition of attracting more customers, more and more companies have paid increasing attention to the deep mining of corporate intangible assets rather than to the traditional sales promotion parameters, such as price, function, product packing, etc. Some current academic studies have shown that customers pay more attention to the ethical aspects of the company, for example: environment protection, corporate social responsibility and corporate behaviors (Larsen, J. T et al., 2001).

Trust is an indispensable part of corporate reputation (Davis Young, 1997) and is also an important prerequisite for the formation of customer loyalty. [4] Empirical researches have indicated that good corporate reputation could reinforce customers' trust in corporate and product and finally promote customer repurchase (Nha Nguyen/Gaston Leblanc, 2001). Though the positive impact of corporate reputation on customer loyalty has been universally accepted, the functional mechanism and mutual interaction between them have not been deeply studied. How to take advantage of this valuable intangible asset to reinforce customer loyalty needs further empirical research.

In 2002, Schwaiger (Manfred Schwaiger, 2004) put forward a new measurement and explanation model of corporate reputation by considering corporate reputation as a combination of affective component and cognitive component. The estimation results of this empirical research have shown a good fitness of this model within Western cultures (Schwaiger, 2004), which trigger us to expand this model to the eastern country. In this paper, taking advantage of Schwaiger's model, we empirically studied the influence of corporate reputation on customer loyalty and found out

which driving factors exert the most important and significant influence, consequently providing practical guide and drawing meaningful implications for corporate reputation management task.

1. Measurement and explanation of corporate reputation

As one of the indispensable part of corporate core competency, the importance of corporate reputation has been accepted with any doubt. However, scholars and practitioners have failed to reach a consensus on how to define and measure corporate reputation. In previous paper (Fombrun, C. / C. Van Riel, 1997; Deephouse, 2000; Shenkar, O. /E. Yuchtman-Yarr, 1997; Fombrun, 1996; Lewis, 2001; Wartick, 2002), we have comprehensively and critically reviewed present definition and measurement method of corporate reputation, for the sake of brevity; we don't provide relevant literature review in this paper.

Making a comprehensive survey of available measurement method, we can find that most of these methods concentrate on the cognitive aspect of corporate reputation, no matter fortune's "Most respectable companies…" or the "Reputation quotient" (RQ). Questionnaire with details of these measurement have been opened to public, however, the aspects these measurements focus on reflect their concentration on cognitive factors. But if we probe corporate reputation in a deep way, we can see the different group of stakeholders understand corporate reputation in different ways. Customer's evaluation of corporate reputation towards a company not only involves cognitive judgment of the company, but also includes affective feelings to the company, which indicates the deficiency of current measurement method.

Based on attitude theory, Schwaiger put forward a new corporate reputation measurement and explanation model by considering corporate reputation as the combination of cognitive and affective components. After literature review, expert interviews and focus group discussion, eighteen items were selected to explain corporate reputation and six items were assigned to evaluate both the affective as well as the cognitive component (see Table 1). The model development was in line with Rossiter's C-OAR-SE procedure (Rossiter 2002). By principle component analysis of eighteen explanative items, four driving factors were extracted and they are: quality, performance, corporate social responsibility (CSR) and attractiveness.

Insert Table 1 Here

2. Empirical Research

2.1 Data Collection

In March 2008, face-to-face interviews were conducted at ten places in China including both urban areas and rural areas. A seven-point rating scale was used in the personal-interviews. The questionnaire (see Table 1) was administered to 100 respondents at each place, which led to a total of 1,000 respondents' evaluation on the four companies mentioned above.

After ruling out 21 questionnaires which failed to provide complete information, we applied an optimization algorithm in order to draw a sub sample almost perfectly matching sociodemographic means from the sample and the corresponding means in the Chinese population. This resulted in a quasi-representative database of the Chinese population containing 302 respondents' questionnaires. By restructuring the original data, we finally got a sample of 1,208 company evaluations.

Before asking the respondents to evaluate, two questions "Are you involved in household decisions?" and "Do you know the companies BMW, Siemens, Haier Group and China Mobile at least by name?" were asked to make sure that our respondents were qualified to evaluate these companies. The questionnaire was administered to 100 respondents at each place, which led to a total of 1,000 respondents' evaluation on the four companies mentioned above.

After ruling out 21 questionnaires which failed to provide complete information, we applied an optimization algorithm in order to draw a subsample almost perfectly matching sociodemographic means from the sample and the corresponding means in the Chinese population. This resulted in a quasi-representative database of the Chinese population containing 302 respondents' questionnaires. By restructuring the original data, we finally got a sample of 1,208 company evaluations.

2.2 Principal Component Analysis

Table 2 indicates that the concept to split corporate reputation into an affective and a competence component still works in Chinese context, where the affective component explain 38.9% of the original information and the cognitive component explains 34.8%. Table 3 shows that again we can extract the four factors quality, performance, responsibility and attractiveness from the 18 explanatory items explaining 65% of the original information.

Insert Table 2 Here

The statistical results in last section shows the applicability of considering corporate reputation as a two-dimension construct in China. Four driving factors were extracted again with China data. Then structural equation modeling with partial least squares would be used to analyze how corporate reputation affects customer loyalty and which driving factors play the most important role.

3. PLS Estimation Results with smartPLS

Since our focus is placed on the explanation of an endogenous construct, variance-based methods like Partial Least Square (PLS) analysis are preferred. Another reason to adopt this approach is that PLS can deal with both formative and reflective construct, which we exactly demand in our case. Contrary to covariance-based structural equation models, which attempt to reproduce the observed covariance matrix using a maximum-likelihood function, PLS understands the latent variable as weighted sums of their respective indicators (Chin/Newsted 1999; Fornell/Cha 1994) and attempts to predict values for the latent variables (component scores) using multiple regressions (Chin 1998b; Chin/Newsted 1999; Fornell/Bookstein 1982; Fornell/Cha 1994).

PLS-model estimation was performed using SmartPLS. As the item scales are comparable, a standardization of the data is not necessary, so that model estimation was performed using the original data (Chatelin et al. 2002). To test whether path coefficients differ significantly from zero, t-values were calculated using bootstrapping procedure (Chartelin et al., 2002; Chin 1998b). Contrary to the default of 100 cases and 100 samples in SmartPLS, we calculated with 1208 cases and 500 samples to get more stable results. Since William Gould and Jeff Pitblado (2005) suggested to choose a sample size of the Bootstrapping procedure which is equal to the number of cases in the original dataset, because the standard error estimates are dependent upon the number of observations in each replication. The final coefficients estimated by smartPLS were shown in three parts (see Table 4, Table 5). All coefficients are presented with t-values given in parentheses.

Insert Table 4 Here

Insert Table 5 Here

In Table 5, the results of the reflective part of the model in Table 4 show that all factor loadings exhibit values of above 0.8 indicating a strong goodness of fit. Composite reliabilities of each component are uniformly higher than 0.8 while the Cronbach's α are located around 0.8, thus meeting stipulated thresholds (Nunnally/Bernstein 1994). To examine the discriminant validity, the Fornell/Larcker (1981) criterion is applied, where the square root of each endogenous construct's average variance extracted (AVE) is compared to its bi-variate correlations with all opposing endogenous constructs (cp. Hulland 1999, Gregoire/Fisher 2006). The result showed that the square root of AVE is greater than the variance shared between likeability and competence. Thus we can presume discriminant validity between the likeability and the competence components. According to the R squared value of customer loyalty construct, we can see the two components of corporate reputation has explain more than half of the information of customer loyalty, which indicates significant influence of corporate reputation on customer loyalty.

Insert Table 6 Here

4. Discussions and Suggestions

Table 6 shows all the path coefficients with corresponding t-values in the parenthesis. The statistical results indicate all the path coefficients are significant except the path from attractiveness to likeability. The path coefficients from likeability and competence to customer loyalty are respectively 0.520 and 0.204 with corresponding t values of 14.170 and 5.738 at the 5% level, which shows significant positive impact of both two components of corporate reputation on customer loyalty. Furthermore, it can be found that likeability exerts more significant impact on customer loyalty rather than company's competence, which tells the CEO what the focus of daily reputation management work is. If a company could invest more on affecting and improving customers' affective feelings towards the company, it would be much easier to establish and reinforce customer loyalty with company.

With further analysis of four driving factors, it can bee seen that the performance factor exhibits most significant influence on positively affecting customer loyalty, since it has the most important driving effect on both likeability and competence. This tells us a big step in improving company's performance could result in a positive achievement on customer's affective feelings towards the company and on customer's cognitive judgment towards the company's competence as well.

Examining other three driving factors, we found the corporate social responsibility (CSR) has the second most significant driving impact on the affective component of corporate reputation. With the rapid economic development, the contradiction between economic development and environment protection has aroused unprecedented attention. When evaluating a company's reputation, customers are apt to put more attention on the responsibility a company takes over rather than on the product price, packing and traditional function. For instance, after Wenchuan earthquake happened, many companies immediately donated money or living materials or food to the stricken area, which is a piece of excellent and appropriate self marketing promotion to the whole society. The donation behavior makes customers identify more with the company and consequently establish firm customer loyalty.

To sum up, good corporate reputation does exert significant positive influence on customer loyalty improvement. By examining and comparing all the path coefficients, it can be seen that performance factor and corporate social

responsibility factor are the most two important driving factors on affecting customer loyalty. Further research is needed to test the stability of these results by industry differentiation.

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Table 1. Constructs and measurement items (Questionnaire)

Construct		Item
Measurement Construct	Likeability	… is a company I would regret more if it didn't exist any more than I would with other companies . … is a company I can identify with better than with other companies I regard … as a likeable company.
	Competence	I believe that … performs at a premium level. As far as I know … is recognized world-wide. … is a top competitor in its market.
Driver Construct	Quality	The products/services offered by … are of high quality. I think that …'s products/services offer good value for money. The services … offers are good. … seems to be a reliable partner for customers. Customer concerns are held in high regards at … In my opinion … tends to be an innovator, rather than an imitator.
	Performance	… is an economically stable company I assess the business risk for … as modest compared to its competitors. I think that … has growth potential. In my opinion … has a clear vision about the future of the company. I think … is a very well managed company.
	Responsibility	I have the feeling that … is not only concerned about profit. I have the impression that … is forthright in giving information to the public … behaves in a socially conscious way. … is concerned about the preservation of the environment. I have the impression that … has a fair attitude towards competitors.
	Attractiveness	I like the physical appearance of … (Company buildings, branch offices). In my opinion … is successful in attracting high-quality employees.

Table 2. Principal component analysis result of six reflective indicators

Item	Component	
	Likeability	Competence
… is a company I would regret more if it didn't exist any more than I would with other companies	0.870	0.213
… is a company I can identify with better than with other companies	0.834	0.300
I regard... as a likeable company	0.770	0.347
… is a top competitor in its market	0.225	0.839
I believe that … performs at a premium level	0.246	0.825
As far as I know … is recognized world-wide	0.422	0.655
Variance explained	38.9%	34.8%
Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization		

Table 3. Principal Component Analysis of 19 explanatory items

Item	Factor			
	Quality	Performance	CSR	Attractiveness
... seems to be a reliable partner for customers.	**0.749**			
Customer concerns are held in high regards at....	**0.737**			
The products / services offered by ... are of high quality.	**0.698**			
The services ... offers are good.	**0.693**			
I think that ...'s products / services offer good value for money.	**0.689**			
In my opinion ... tends to be an innovator, rather than an imitator.	**0.648**	0.300		
… is an economically stable company.		**0.770**		
I think that ... has growth potential.		**0.724**		
I assess the business risk for ... as modest compared to its competitors.		**0.670**		
... has a clear vision about the future of the company.	0.303	**0.660**		
... is a very well managed company.	0.415	**0.582**		
I have the feeling that ... is not only concerned about the profit.			**0.842**	
... behaves in a socially conscious way.	0.340	0.308	**0.629**	
I have the impression that ... is forthright in giving information to the public.	0.421		**0.548**	0.330
I have the impression that ... has a fair attitude towards competitors.	0.490		**0.465**	
... is concerned about the preservation of the environment.			**0.465**	0.537
I like the physical appearance of ... (company buildings, branch offices).	0.431			**0.699**
In my opinion ... is successful in attracting high-quality employees.	0.505	0.350		**0.482**
Variance explained	23.8%	17.1%	12.9%	11.2%

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization. Loadings< 0.3 suppressed.

Table 4. PLS estimation of 18 explanative indicators with smart**PLS**

Items	Performance	CSR	Attractiveness	Quality
... is a very well managed company.	0.475 (10.934)			
I think that ... has growth potential.	0.158 (3.652)			
… is an economically stable company.	0.181 (4.381)			
I assess the business risk for ... as modest compared to its competitors.	0.182 (4.920)			
... has a clear vision about the future of the company.	0.239 (6.007)			
I have the impression that … has a fair attitude towards competitors.		0.433 (10.159)		
... behaves in a socially conscious way.		0.307 (6.047)		
I have the feeling that ... is not only concerned about the profit.		0.099 (2.0043)		
I have the impression that ... is forthright in giving information to the public.		0.174 (3.616)		
... is concerned about the preservation of the environment.		0.214 (4.528)		
I like the physical appearance of ... (company buildings, branch offices).			0.534 (12.568)	
In my opinion ... is successful in attracting high-quality employees.			0.596 (14.701)	
The products / services offered by ... are of high quality.				0.298 (5.464)
I think that ...'s products / services offer good value for money.				0.187 (3.558)
The services ... offers are good				0.150 (2.743)
... seems to be a reliable partner for customers.				0.180 (3.674)
Customer concerns are held in high regards at....				0.127 (2.450)
In my opinion ... tends to be an innovator, rather than an imitator.				0.271 (5.587)

Table 5. PLS estimation of three endogenous construct with t values in parenthesis

	Likeability	Competence	Customer Loyalty
… is a company I would regret more if it didn't exist any more than I would with other companies	0.876 (90.304)		
… is a company I can identify with better than with other companies	0.892 (90.716)		
I regard... as a likeable company	0.860 (82.317)		
I believe that … performs at a premium level		0.838 (67.033)	
As far as I know … is recognized world-wide		0.811 (48.740)	
… is a top competitor in its market		0.845 (66.028)	
If I had the chance, I would choose …. Company again.			0.872 (83.347)
I would recommend … company to my friends.			0.891 (100.017)
I consider myself as a long-term loyal customer of …. Company.			0.839 (60.938)
R squared	0.5934	0.5317	0.534
Composite Reliability	0.908	0.870	0.861
Communality	0.768	0.691	0.752
AVE	0.7677	0.6916	0.752
Cronbach's α	0.8487	0.7768	0.836
Correlation between latent variables	0.5885	0.5885	/

Table 6. PLS estimated path coefficients with t-value in parenthesis

	Path Coefficients	T-values
Quality -> Competence	0.151	3.279
Quality -> Likeability	0.184	4.196
Attractiveness -> Competence	0.122	3.119
Attractiveness -> Likeability	0.037	0.968
Performance -> Competence	0.433	10.018
Performance -> Likeability	0.387	9.948
CSR -> Competence	0.084	2.125
CSR -> Likeability	0.262	6.525
Competence -> Customer Loyalty	0.204	5.738
Likeability -> Customer Loyalty	0.520	14.170

Macroeconomic Synchronization and Foreign Direct Investment Inflow into ASEAN: Evidence from Malaysia's Experiences

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Abstract

ASEAN has experienced remarkable growth performance in the last decade, in particular the period before the 1997 economic crisis. This great achievement is partly attributed to the inflow of foreign direct investments (FDI) into the region. Today, ASEAN is facing stiff competition to attract FDI inflow with the emergence of China and India as new competitors or locations for (FDI). Meanwhile, the 1997 economic crisis has also resulted in large volatility especially exchange rate volatility. As part of the efforts to stabilize the region, there is a suggestion that ASEAN has to pursue regional currency. Regional currency, in turn, requires ASEAN macroeconomic to converge or synchronize to enable all members will be benefited from the formation. In the nutshell, it is the importance of this convergence that propels this study to undertake an investigation into the impact of several macroeconomic convergences on the FDI flow into ASEAN. As expected, this study found that macroeconomic synchronization, which is believed as able to strengthening the formation of ASEAN Free Trade Area (AFTA) if successfully coordinated, has a significant impact on the inflow of FDI into the region.

Keywords: Maastricht criteria, FDI, AFTA

JEL classification: F21, E62

1. Introduction

Foreign direct investment (FDI) is regarded by economists and policy makers as today's chief means of economic development and growth. Unlike the flighty nature of portfolio investment, FDI tends to focus on the longer term investment window and is thereby more reliable. For this and other attractive traits, FDI is now treated more than ever as the capital flow of choice (Braunstein and Epstein, 2002). For one, FDI spreads capital, technology and management skills across the globe - all the crucial ingredients for economic growth and development (Crotty et al., 1998). For developing countries, FDI provides the much needed funds for upgrading the economies and fosters economic growth through technology transfer and spillovers.

As shown in Table 1, the amount of FDI flowing into developing countries has grown dramatically over the course of the 1990s, from USD 551 billion in 1990 to USD 2339 billion in 2002. Out of these amounts, ASEAN-5 attracted approximately USD 91 billion in 1990 and USD 278 billion in 2002 (UNCTAD, 2003; note 1). This increase in FDI was the result of concerted actions taken by the ASEAN governments to further boost their respective economies following the successes of the investments made in the 1980s. Among others, ASEAN has adopted a more liberal policy on the inflow of FDI and the exports and imports of materials and parts for FDI firms (Hiley, 1999). In the 1980s and generally through to the late 1990s, ASEAN-5 were well positioned to attract a relatively large portion of the global boom in FDI. This scenario, however, began to change in the 1990s with the emergence (or re-mergence as the case maybe) of investment hot spots such as China, Eastern Europe, Latin America, South Asia, and Southern Africa. Although the amount of FDI inflow is growing, the ratio of FDI inflow into ASEAN over total inflow into developing countries henceforth began to decline or stagnates, as shown in Table 1 (note 2).

<Table 1 insert here>

According to Woo (2003), based on the Overall Technological Index (OTI), ASEAN-4 is ranked higher than China in terms of receiving technologies from abroad, but is lower in terms of its capability to develop indigenous technology (note 3). Many US multinational corporations (MNCs) now view China as a country with the highest growth potential. Some of them, such as General Motors, Ford Motor Co., and AT&T have invested billions of dollars in China to capitalize on the expected growth (Madura, 2005). Its large population not only provides a ready domestic market for their products, but also an abundance of cheap labor. With the diversion of FDI flow from ASEAN to China (and possibly also to India, which is another emerging location for FDI) and the competition posed by Eastern Europe and Latin America for scarce capital, ASEAN's economic growth and technological development is at risk. Investment incentives as provided by individual ASEAN countries are inadequate to significantly tilt investment decisions in their favor. What is required is a fully implemented AFTA. Not only will a full blown AFTA make the individual ASEAN economies more attractive as a location for FDI, it will also provide foreign investors with economies of scale for the production of truly regional export products and for the production of goods and services for the region's consumption (Akrasanee and Stifel, 1993).

Although work on the full implementation of the ASEAN Investment Area (AIA) has accelerated somewhat since 2002, its integration effort is still lagging and implementation and commitment still short of expectation. In view of this state of affairs, this paper seeks to assess whether the harmonization of several AFTA strengthening policies will have an impact on FDI flow vis-à-vis the individual ASEAN economies.

The organization of this paper is as follows. The next section reviews the theoretical aspects of the study, focusing particularly on how economic integration and FDI flow is linked as well as the association between Maastricht criteria and economic integration. Section III reviews the previous studies on this issue. Section IV provides the empirical specification as well as the estimation procedure, while Section V discusses the findings. Finally, section VI summarizes and concludes the study.

2. Theoretical Review

2.1 Theoretical Link between Economic Integration and FDI Inflow

According to Monge-Naranjo (2002), the most striking feature of globalization in the last two decades is FDI rather than trade. FDI flows have grown ten-fold during the period as compared to just a two-fold increase in trade. This phenomenon is particularly remarkable in the case of developing countries where FDI is the fastest growing component of foreign capital inflow (Monge-Naranjo 2002).

Regional economic integration, or more specifically AFTA, in the case of ASEAN, can affect the inflow of FDI in several ways. Firstly, it needs to be noted that in principle, the effect of a FTA on FDI need not always be a positive one. In fact, in the simplest Heckscher–Ohlin world where free trade achieves factor-price equalization, capital has no incentive of crossing borders. According to this logic, a free trade agreement could reduce the incentives for FDI if the original purpose of FDI is to bypass trade barriers in order to access protected domestic markets. In contrast, when the factor endowment of countries is sufficiently unequal, there is incentive for capital to relocate to more labor-intensive countries. These incentives are further strengthened when the flow of goods between countries are unimpeded. Moreover, third-country corporations may, as a diversion, choose to invest in one of the FTA member countries in order to take advantage of the lower tariffs imposed by the agreement partners (Cuevas et al., 2005, p. 473).

Meanwhile, Blomstrom and Kokko (1997) and Levy-Yeyati et al. (2001) provided relatively extensive theoretical links between changes in FDI and free trade. According to the vertical FDI theory, multinational corporations establish different stages of production in different countries in order to take advantage of specific conditions in the local factor markets. Conversely, in a horizontal FDI set-up, multinational corporations would establish similar production facilities in several countries, with each one serving the local market. A horizontal FDI set-up is a rational strategy when obstacles to trade (natural or artificial) are significant. It does not require any specific degree of similarity or difference in factor endowments among the countries, as long as production becomes feasible and economically viable after the investment has taken place. A vertical FDI set-up, on the other hand, would be more suited in a liberalized environment of a regional integration where trade barriers are reduced or removed.

According to Bitzenis (2004), it is regionalization rather than globalization that is responsible for the inflow of FDI into the Balkan region. Had it not been for regionalization, the individual Balkan countries may not even receive any FDI. Bitzenis (2004) made this conclusion after observing an inconsistent disparity between a higher FDI accumulation and the dismal state of globalization related reforms and transition programs happening in that region (note 4).

2.2 Maastricht Criteria and Economic Integration

Regionalism may not manifest itself through any kind of formal institution. It could exist through various types of cooperation and alliances among the countries in question (Acharya, 1999). Regionalism assists in the creation of free trade zones and the general liberalization of economic activities. It facilitates the progress of under-developed countries

through interaction with the external control mechanisms (Bowles, 1997). In addition, it helps the entry of small and developing countries into a union such as the EU, which reflects the success of multilateralism (Sapir, 2000).

As argued by Afxentious (2000), political considerations are rarely free of economic considerations. In the case of the European Union (EU), for instance, economic considerations eventually dominated the objectives of the regional integration while intense political unification has proven to be untenable. This is evident from the five conditions set forth in the Treaty of Maastricht of 1992 that saw the birth of the union. Known as the "Maastricht criteria," the 5 conditions are: (1) an inflation rate of no more than 1.5 percentage points above the average of three countries with the lowest inflation rates, (2) nominal long-term interest rates not exceeding more than 2 percentage points of the three countries with the lowest interest rates, (3) exchange rate stability, (4) Government budgetary deficit should not exceed 3% of GDP, and (5) Public debt should not exceed 60% of GDP. By adding this inter-governmental co-operation to the existing "Community" system, the Maastricht Treaty created a new structure with three "pillars" which is political as well economic. This is the evidence of the existence of EU.

Bronk (2002) explained the reason that relatively inflexible conditions can be very effective in furthering both the transition and enlargement processes, and why many of the Central and Eastern Europe Communities (CEECs) are prepared to stick to the reforms needed despite the high economic and political costs of doing so. In essence, Bronk (2002) argued that by acceding and delegating their choice of policy mix to the exigencies of the EU conditions, these countries stand to benefit from a self-reinforcing boost in the market credibility of their transition reforms.

3. Review of Empirical Studies

A number of empirical studies have been conducted on the impact of economic integration on the flow of FDI. Mold (2003) in his study analyzed the impact of the single market program (SMP) on the locational determinants of US FDI for the period 1978–95, a key period in the development of the European single market. However, he found little evidence to support a strong correlation between the formation of SMP and FDI location. On the contrary, Mold (2003) found that size and growth of gross domestic product (GDP) are more important determinants of FDI inflows.

In another study using cross-country panel data, Cuevas et al. (2005) assessed the effect of North America Free Trade Agreement (NAFTA) on the FDI flows into Mexico. Based on their study, it was found that free-trade agreements (FTAs) do exert a significant positive effect on FDI flows, particularly for the smaller members. After controlling for a set of other factors—such as an increase in worldwide FDI flows—it was found that NAFTA generates FDI flows of nearly 60 percent higher than it would have been without the agreement.

As alluded earlier in the context of the Maastricht criteria, countries that wish to embark on joining the union need to accede much of their policy matters to the EU pre-set conditions. Bronk (2002) explored the dynamics of how CEEC commitment to the EU conditions delivers considerable interim (i.e., pre-accession) credibility benefits. These interim credibility benefits are important in themselves in raising investment and FDI. In coming to his conclusion, Bronk (2002) considered a significant amount of empirical evidence, particularly the findings of Bevan and Estrin (2000) and the analogous impact of Italian commitment to enter economic and monetary union (EMU).

Nicoletti et al. (2003) suggested that the removal of border barriers in existing free trade areas (the EU and NAFTA, and thus potentially AFTA) can boost the overall FDI flows among participating countries. However, they argued that the positive effect of a stable exchange rate arrangement (which is one of the Maastricht criteria) on FDI flows into participating countries is less evident.

Blomstrom and Kokko (1997) found that the creation of the Canada-U.S. Free Trade Agreement (CUSFTA) has relatively little influence on direct investment patterns in Canada. The reason for this is that much of the trade between Canada and the United States has long been liberalized before CUSFTA was established. In contrast, Mexico's inclusion in NAFTA and the establishment of the Latin America Common Market or Southern Common Market (MERCOSUR) are likely to significantly affect the region's policy environment, and thereby the inflow of FDI. Of late, Canada has voiced her concern on the "unequal" share of "quality FDI" amidst a growing concentration of high value-added FDI in the United States at the expense of Canada (Globerman, 2001). Specifically, this pertains to FDI flows into knowledge-intensive industries where there is an increased leaning towards the United States and away from Canada in the post-CUSFTA period (Globerman, 2002).

In yet another study, Bitzenis (2004) noted that FDI orientation is not as global as expected and that there is a regional trend in those flows. The regional factor is responsible for channeling FDI into less-developed and poor countries when otherwise they would not be getting any share of it at all. Therefore, this study demonstrated the importance of regional economic integration as another impetus for the inflow of FDI into the individual countries in the regional economic agreement.

Janicki et al. (2005) presented an empirical assessment of the endogenous optimum currency area theory by using the gravity model. Several Maastricht criteria were utilized to assess the effectiveness of the convergence criteria in guiding multinational investments within the European Union. A fixed effects model based on a panel data of FDI flows within

the EU-15 showed specifically that the Maastricht criteria on interest rate, government fiscal policy, and debt do play a significant role in attracting multinational investment. Rojec and Potocnik (1997) and Bitzenis (2004) provided additional support to the finding by Janicki et al. (2005) that EU integration represents a strong incentive for FDI to flow into member and non-member countries in the region. An even stronger incentive for increased FDI in a country is its acceptance as a new member in the EU. There is no doubt that Slovenia's membership in the EU (Rojec and Potocnik, 1997) as well as the Balkan regional economic integration (Bitzenis, 2004) would strongly increase FDI inflow into that country. This increase, however, will not be felt immediately but in the longer term when Slovenia harmonizes her legal and institutional frameworks with EU standards (Rojec and Potocnik, 1997).

4. Empirical specification and estimation procedure

This section uses regression techniques to identify the effect of several Maastricht criteria, which are believed to be as important in the realization of AFTA, on FDI and then uses those estimates to gauge the relative contribution of these criteria and other factors to the evolution of FDI in ASEAN-4. The empirical model specification is based on the study by Janicki et al. (2005) with little modification. This study uses total FDI inflow into the (two) ASEAN economies instead of bilateral FDI flow. Although there is an argument regarding why this study does utilize total, instead of bilateral, FDI, we do believe that this specification is valid (note 5). Our main proposition is that if ASEAN countries could synchronize their macroeconomic policies, couple with the existing effort to promote single market under ASEAN Free Trade Area (AFTA), this effort will support as well as elevate the existing single market formation in ASEAN. Macroeconomic synchronization may reduce the asymmetrical-shock-bound risk. Subsequently, may spur more FDI to inflow into the region. Accordingly, this study also omits the role of distance from the analysis (note 6). The empirical model, which is *a la* gravity model, is specified as follows:

$$FDI_{ij,t} = f(HO_{ij,t}, MC_{ij,t}) \tag{1}$$

where, *HO* refers to Hecksher-Ohlin variable while *MC* stands for Maastricht criteria harmonization. As mentioned in the first place, one of the motivations of FDI inflow is market penetration. By having free trade agreement the rest of ASEAN countries, products made in Malaysia can be marketed in other ASEAN countries. This will be captured by the *HO* variable. In addition, we test several macroeconomic synchronizations on FDI inflow as it will help in reducing risks of doing business in ASEAN (note 7). At this point, it is worth to mention that although ASEAN is still far for implementing any Maastricht condition in its regional integration process, we do incorporate these criteria not in the form of its original standard as discussed in Section 2. Rather we include this in line with the current interest on this issue, namely the level of synchronization of Maastricht criteria. Subscript *ij* denotes two ASEAN economies; where *i* refers to Malaysia and *j* denotes other ASEAN core members (e.g. Indonesia, the Philippines, Singapore and Thailand). In other words, this study will have four combinations or equations to be estimated with respect to Malaysia's experiences. Therefore, *FDI_{ij}* refers to FDI inflow into two ASEAN economies, namely Malaysia and Indonesia (MI), Malaysia-Philippines (MP), Malaysia-Singapore (MS) and Malaysia-Thailand (MT). Similar set up applied to the other variables. If we decompose *HO* and *MC* into their components, we get the following equation (note 8):

$$\ln FDI_{ij,t} = \theta_0 + \theta_1 \ln SIZE_{ij,t} + \theta_2 \ln INFDF_{ij,t} + \theta_3 \ln BGTDF_{ij,t} +$$

$$\theta_4 \ln DBTDF_{ij,t} + \varepsilon_{ij,t} \tag{2}$$

Where, *SIZE* is market size of the two ASEAN economies; *INFDF, BGTDF* and *DBTDF* refer to the differential between the two ASEAN economies in inflation, budget and debt respectively. There are two more criteria which are not included, namely exchange rate stability as well as interest rate. The exclusion of exchange rate stability is because of extensive research has been done in examining the impact of exchange rate volatility (see for example Chit (2008), among others). On the other hand, the exclusion of interest rate is due to difficulty to find a consistent type of interest rate across countries under study. Measurement of each of the variable is as follows:

$$FDI_{ij,t} = (FDI_{it} + FDI_{jt}) \tag{3}$$

$$SIZE_{ij,t} = (GDP_{it} + GDP_{jt}) \tag{4}$$

$$INFDF_{ij,t} = \left| INF_{it} - INF_{jt} \right| \tag{5}$$

$$BGTDF_{ij,t} = \left| BGTDF_{it} - BGTDF_{jt} \right| \tag{6}$$

$$DBTDF_{ij,t} = \left| DBTDF_{it} - DBTDF_{jt} \right| \tag{7}$$

5. Methodology

In order to estimate the above empirical model, we follow the standard time series procedure. We start by analyzing the existence of unit root problem in each series or variable. It will then followed by the test of cointegration. As the sample size in this study is relatively small, autoregressive distributed lag model (ARDL) is seemed to be more appropriate to be used. The ARDL modeling approach as popularized by, among others, Pesaran and Pesaran (1997) and more recently by Pesaran et al. (2001), has a few advantages. The main advantage of this approach lies in the fact that it can be applied irrespective of whether the variables are I(0) or I(1). This approach also allows for the model to take a sufficient number of lags to capture the data generating process in a general-to-specific modeling framework. Although, a dynamic error correction model (ECM) can be derived from ARDL through a simple linear transformation (Banerjee et al., 1998; Pesaran et al., 2001) recently introduced bound testing as an alternative to test for the existence of cointegration among the variables (note 9). The bounds test procedure is merely based on an estimate of unrestricted error correction model using ordinary least squares (OLS) estimator. The UECM is a simple reparameterization of a general ARDL model (Tang, 2003). To illustrate the ARDL modeling approach, the simple model of equation (1) is reconsidered and its corresponding unrestricted error correction version of the ARDL (p, q, r) model is given by:

$$\Delta \ln FDI_{ij,t} = \beta_0 + \beta_1 \ln FDI_{ij,t-1} + \beta_2 HO_{ij,t-1} + \beta_3 MC_{ij,t-1} +$$

$$\sum_{i=1}^{p-1} \beta_{4i} \Delta \ln FDI_{ij,t-i} + \sum_{i=0}^{q-1} \beta_{5i} \Delta HO_{ij,t-i} + \sum_{i=0}^{r-1} \beta_{6i} \Delta MC_{ij,t-i} + \varepsilon_t \tag{8}$$

The second part of equation (8) with β_{4i}, β_{5i} and β_{6i} represents the short run dynamics of the model whereas the first part

with β_1, β_2 and β_3 represents the long run relationship. The null hypothesis in the equation is $\beta_1 = \beta_2 = \beta_3 = 0$,

which means the non-existence of the long run relationship. Given the estimated UECM in equation (8), the long-run

relationship can be derived from UECM that is the estimated coefficient of the one lagged explanatory variable

(multiplied with a negative sign) divided by the estimated coefficient of the one lagged dependent variable (Bardsen,

1989; Tang, 2003). The long-run impact of *HO* and *MC* in (1) are given by (β_1/β_0) and (β_2/β_0), respectively.

Equation (8) is estimated by using annual time series data for the period 1970 to 2004. The data series used are taken from the International Financial Statistics (IMF), and World Development Indicators (World Bank, 2006) and covers ASEAN-5 economies. However, our focus will be on Malaysia's experiences with its four neighboring ASEAN countries, namely Indonesia, the Philippines, Singapore and Thailand.

6. Results and discussion

Although the ARDL procedure requires no pre-testing (i.e. stationarity level), all variables are first tested for stationarity with intercept and trend using the Augmented Dickey- Fuller (ADF, see note 10). Since all variables are found as not necessarily integrated at order one, the use of the ARDL procedure is valid. The unrestricted error correction model (UECM), which is a reparameterization of autoregression distributed lag (ARDL) model (Bardsen, 1989; Tang 2003), is used to estimate the model. By using Hendry's general to specific method, we can see that, despite the significant reduction in parameters, the goodness of fit of the specification (*R-squared*) and the Akaike information Criterion (*AIC*) of regression remain superior as evident from Panel II of Table 2.

<Table 2 insert here>

Meanwhile, the robustness of the model is confirmed by several diagnostic tests, such as the LM test (Breusch-Godfrey serial correlation test), the WHITE test (heterogeneity test) and the Jacque-Bera test (normality test) as shown in Panel III of Table 2. All the tests, as shown in the lower part of each panel, reveal that the models have the desired econometric properties, namely, the residuals are serially uncorrelated and normally distributed, homoscedasticity and all estimated parameters are stable over time (test statistics fall within the 1% critical line). Therefore, the results reported are valid and reliable.

<Table 3 insert here>

The results of bounds testing approach for cointegration or existence of long run relationship indicate that the calculated *F- statistic* is at least 5.3956 (in the case of Malaysia-Philippines, or MP), which is higher than the upper level of bounds critical value of 4.68 and the lower bounds value of 3.41, implying that the null hypothesis of no cointegration cannot be accepted, and indicating that there is indeed a cointegration relationship among the variables in all combinations (see Table 3).

After having is established the UECM, we investigate the estimated long run equation. As shown in Table 4, the synchronization of all of the Maastricht criteria has a significant negative impact on the inflow of FDI, except for debt (DBTDF) which is not significant in the case of MS. The plausible explanation could be that Singapore is capital exporter rather than debtor. Therefore, to reach the level of zero debt like Singapore is unlikely to be realized in the near future and this aspect will become one of hurdles to achieve the idea of single currency (note 11). SIZE, which is utilized as a proxy for Hecksher-Ohlin variable, also shows a significant positive impact. Therefore, the elimination of intra-regional tariffs vis-à-vis establishment of single market in ASEAN will affect the level of sales by multinational subsidiaries and subsequently expected to be another attraction for new FDI to inflow to the region, while retaining the existing FDI in the region.

<Table 4 insert here>

The above results indicate that an improvement in the level of synchronization of several economic policies will improve the inflow of FDI into the region. This finding highlights the importance and contribution of the Maastricht criteria in providing additional attraction for FDI. However, SIZE or Hecksher-Ohlin variable remains the main contributor to the inflow of FDI, which is consistent with the finding by Mold (2003).

7. Conclusion

This study employs the bounds testing (ARDL) approach to cointegration to examine the relationships between harmonization of several Maastricht criteria and FDI, using several members of AFTA as the case study.

One observation gleaned from the results shown above is that Maastricht criteria harmonization can significantly improve the level of FDI flow into the region, or more precisely, the individual ASEAN economy. Thus, policies to reduce asymmetry in economic policies among the members can be expected to increase the share of FDI inflow. However, the standard determinant of FDI inflow, namely, the market, remains the main determinant. Hence, stronger regional economic integration can be anticipated to further attract FDI into ASEAN. Another interesting point to note and requires further research is regarding the dynamic relationship between trade integration and business cycle synchronization. Regardless of current nature of business cycle (even though if we assume they are asymmetrical), the trade intensities and compositions of trade flow changes, so will business cycle pattern (Fiess, 2001), implying potentional avenue for ASEAN to search for regional mean of regional development in future. This could be done better in the presence of FDI which is perceived as capable to stimulate and change regional trade and subsequently the pattern of business cycle.

Nevertheless, this study is not without limitation. The first weakness is the use of bilateral model and focus on Malaysia's experiences which may not be necessarily validating the generalization made in conclusion of the study. Therefore, as for future direction of research pertaining to this issue, at least the extension of this study should attempt to investigate other combinations as part of the validating process. The second limitation of this study is regarding the choice of optimum level of each macroeconomic variable. The study done on exchange rate alignment found that even in the case of Singapore, its exchange rate tends to misalign from its true value (Yip and Wang, 2001; see note 12). In other words, as concluded by Frankel and Rockett (1988), if macroeconomic coordination is based on the wrong economic model, it can make countries worse off than under non-cooperation.

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Notes

Note 1. Indonesia, Malaysia, the Philippines, Singapore and Thailand.

Note 2. To a great extent the problems faced by ASEAN today in attracting more FDI stem from their successful past in harnessing it. Other developing countries, who have witnessed what FDI did to the ASEAN economies, have in turn put in the efforts to attract FDI into their own countries as well. As a result, ASEAN-5 economies are now facing stiffer competition from other emerging economies.

Note 3. Indonesia, Malaysia, the Philippines and Thailand.

Note 4. This is not to say that the globalization theory is invalid in general, but the fact remains that there are countries or even whole regions that do not receive FDI flows. FDI flows into less-developing or poor countries, if any, show little or no growth at all (Bitzenis, 2004).

Note 5. This study is basically attempted to investigate the effect of macroeconomic synchronization on the inflow of FDI. By definition, macroeconomic synchronization is similar to what is termed as symmetrical shock in other studies and therefore the existing available method is bilateral procedure only. In reality, it is difficult to measure or to find way of measurement of macroeconomic synchronization for more than two countries at the same time.. The procedure is – in the first place, as we measure macroeconomic synchronization from bilateral perspective. To capture the implication at regional level, we test more than one combination. If all estimated equations or combinations highlight the same outcome, we may at the later stage conclude that the proposition is also valid and applicable at regional level. Considering that this study is among the first attempt, more study pertinent to this issue has to be done in future to reconfirm the finding in this study.

Note 6. We do believe that this variable may pose significant implication and therefore, future study should attempt to incorporate this element in their specification. As argued by Markusen and Venables (1999) and Carr *et al*. (2001), the elimination of intra-regional tariffs will, in general, affect the level of sales by foreign affiliates, but its extent will depend on, among others, the importance of transport costs in setting up foreign affiliates. This variable is omitted due to short observation which if included may reduce the reliability of the estimation. Furthermore, one of several

important conclusion pointed out in te Velde and Bezemer (2006) is that the position of countries within a region matters for attracting FDI, i.e. that smaller countries and countries located further away from the largest country in the region benefit less from being part of a region.

Note 7. On top of all, the validity of this study (macroeconomic synchronization) is very much dependent on the nature of business cycles among the members. If business cycles are similar, coordination of macroeconomic policies can become desirable, with a common currency as the ultimate form of policy coordination (Fiess, 2001).

Note 8. In the original model of Janicki et al. (2005), market similarity, resource endowment and distance are also included. However, due to the limited number of observations, we decided to exclude these variables from the model.

Note 9. The ECM integrates the short-run dynamics with the long-run equilibrium without losing long-run information.

Note 10. Results are available upon request.

Note 11. As mentioned in Calvo and Reinhart (2002) and Devereux and Lane (2003) argued that large foreign-currency denominated debt has became one of the deterring factor for developing countries to form or agree on single currency formation.

Note 12. Misalignment, which refers to systematic deviations of nominal exchange rates (NER) from their purchasing power parity (PPP) levels, may engender serious instabilities of the international macroeconomic system (Yotopoulos and Sawada, 2006).

Table 1.   FDI inflow (in Millions of USD)

	1980	1990	2000	2001	2002
World	699415	1954152	6146812	6606855	7122506
Dev. Economies	307469	551481	2029412	2173769	2339632
ASEAN-5:	23908	91086	476248	266714	278109
	[7.78]	[16.52]	[23.46]	[12.26]	[11.88]
Indonesia	10274	38883	60638	57359	55836
	[3.34]	[7.05]	[2.98]	[2.63]	[2.38]
Malaysia	5169	10318	52747	53301	56505
	[1.68]	[1.87]	[2.59]	[2.45]	[2.41]
Philippines	1281	3268	9001	10468	11539
	[0.41]	[0.59]	[0.44]	[0.48]	[0.49]
Singapore	6203	30408	113431	116428	124003
	[2.02]	[5.51]	[5.58]	[5.35]	[5.30]
Thailand	981	8209	24468	29158	30226
	[0.31]	[1.48]	[1.20]	[1.34	[1.29]

Source: UNCTAD (2003), Annex Table B.3.

Note: Figure in [ ] denotes percentage change. The percentages for year 2000 and 1990 are relative to year 1990 and 1980, respectively.

Table 2. Unrestricted error correction model (UECM)

	MT	MP	MI	MS
Panel I: Unrestricted Error Correction Model				
Constant	-5.6018*** [-4.8947]	-3.6692** [-3.3649]	8.2088*** [7.7610]	9.8955 [0.7797]
lnFDI(-1)	-4.5911** [-2.8888]	-6.7452*** [-4.3963]	-3.6053*** [-8.5571]	-2.3734* [-2.2614]
lnSIZE(-1)	-1.3260** [-3.4252]	-2.6625*** [-4.3239]	-1.1588*** [-8.7158]	-2.1375*** [-4.8577]
lnINFDF(-1)	0.3459* [2.2097]	1.3173** [3.4444]	0.1713*** [6.7447]	0.5637* [1.8698]
lnBGTDF(-1)	0.8278** [3.1597]	1.8941** [3.1505]	1.1896*** [4.8273]	0.1642* [2.1973]
lnDBTDF(-1)	0.7588* [1.9400]	0.5949* [2.6842]	0.6692** [2.8335]	0.1744 [0.0352]
ΔlnFDI(-1)	-	-	-	-0.0459*** [8.1082]
ΔlnSIZE	-0.3340** [-3.5509]	-1.8758** [-3.2625]	-	0.1138 [1.4384]
ΔlnINFDF	-0.7658* [-1.9123]	1.5965 [1.5957]	-0.1617 [-1.5810]	-
ΔlnBGTDF	-0.1169 [-1.3521]	1.6251* [2.8608]	-0.2615 [-1.2287]	0.0204* [2.5723]
ΔlnDBTDF	-	-	-	0.0557 [1.5717]
ΔlnFDI(-2)	-	-	-	-3.0105 [-0.6670]
ΔlnSIZE(-1)	1.4788** [2.7373]	0.8515* [3.0213]	-	1.8907 [0.1621]
ΔlnINFDF(-1)	-2.8733* [-2.0171]	-	-0.5488*** [-4.2854]	-
ΔlnBGTDF(-1)	-	-6.0875 [-1.5597]	12.1147*** [11.7206]	-0.0038*** [-5.9967]
ΔlnDBTDF(-1)	-	-5.1787** [-3.5048]	-	-
Panel II: Model Criteria				
Adj-R^2	0.8340	0.7021	0.8113	4.4326
AIC	- 1.2550	- 1.1704	-3.3840	-2.8463
Panel III: Diagnostic Tests				
Normality[a]	0.7918{0.67}	0.0422{0.97}	1.0212{0.60}	4.4444{0.11}
Serial Corr.[b]	0.3488{0.71}	1.2836{0.32}	0.6885{0.52}	0.1071{0.89}
Heterogeneity[c]	0.3960{0.54}	1.1848{0.29}	0.9031{0.35}	1.4429{0.13}

Note: Asterisk * denote significant at least at 10%. Figure in [ ] stand for t-value. Figure in {} refers to p-value. [a] Jacqua-Bera is the test for the normality of the residuals. [b] Serial Correlation LM Test is the test for autoregressive. [c] White Test is the test statistic for possible heteroscedasticity in the residuals. Stability test is conducted by using CUSUM test and available upon request.

Table 3. Bound Cointegration Test

	MT	MP	MI	MS
F-stat	9.2514**	5.3956**	8.0108**	10.3490**
CRITICAL VALUE	**Lower bound**		**Upper bound**	
1 %	3.41		4.68	
5 %	2.26		3.35	
10 %	2.62		3.79	

Note: Asterisk ** denotes significant at 1% critical value. Asymptotic critical value bounds are obtained from Table CI, Case III: unrestricted intercept and no trend (Pesaran et al., 2001, p. 300).

Table 4. Long-run relationship

	MT	MP	MI	MS
SIZE	0.2888**	0.3947**	0.3214**	0.9006**
INFDF	- 0.0753**	- 0.1953**	- 0.0475**	- 0.2375**
BGTDF	- 0.1802**	- 0.2808**	- 0.3229**	- 0.0692**
DBTDF	- 0.1652**	- 0.0882**	- 0.1856**	0.0735

Note: Asterisk ** denote significant at least at 10% critical value.

The Attractiveness of Entrepreneurship for Females and Males in a Developing Arab Muslim Country; Entrepreneurial Intentions in Tunisia

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Abstract

This article examines the entrepreneurial intentions of young well educated people in Tunisia. Tunisia is a Muslim country which is "catching up". Hence, understanding the attitudes and entrepreneurial intentions of females, and contrasting these with males, will provide an account of cultural attitudes towards female enterprise. Our survey of 332 students showed that male and female intentions were very positive, but varied by gender. We found that cultural gender expectations continued to play a major role, but that this was most obvious in how female enterprise could be operated, rather than in the attractiveness of entrepreneurship itself.

Keywords: Entrepreneurship, Gender, Discriminant analysis

1. Introduction

In some Arabic Muslim countries, culture and attitudes may prevent women from playing a full economic role. Yet, it is very well recognized that entrepreneurship plays a crucial role in enhancing economic development (Carree and Thurik 2003), so that the part women play in entrepreneurship may be critical in achieving development. Tunisia, an emerging Muslim nation located in North Africa, is a modern Arab country striving to catch up with more developed nations. We argue that establishing the entrepreneurial intentions of young well educated Tunisian women may be useful in helping us to understand future developments. The entrepreneurial intentions of well educated young people of both genders are important because they are the most likely group to influence future events and the most likely to be future leaders. Nonetheless, male entrepreneurship is likely to represent an economic "base" line, whilst younger female entrepreneurial intentions are more likely to represent social change. Accordingly, capturing the intentions of young well educated females will be useful, not only in terms of what themselves may do, but also in seeing how the culture is changing and, indeed their role in influencing future cultural attitudes. As Idris (2008) noticed, studying women's participation will have strategic implications on a firm operating in a gender- sensitive society.

Across the world, awareness of female entrepreneurship has increased and is characterised by the increasing numbers of women setting up in business (Buttner 1993). Female entrepreneurs are thus recognised as making an important contribution to the economy, both as a source of employment and of potential growth (Global Entrepreneurship Monitor: GEM, 2007). Nonetheless, entrepreneurship is frequently described as a form of masculinity (Bird and Brush 2002;

Bruni and al 2004) and women remain under-represented in the entrepreneurial population. So that, a significant gender gap exists in rates of entrepreneurial activity across genders (GEM, 2006). Moreover, there are considerable differences between male and female entrepreneurship; motivations, financing strategies, risk perception and even success criteria are not the same (Galloway and al 2002; Buttner and Moore 1997). There are also considerable variations between countries; the GEM study (2007) notes that, with the exception of Brazil, Peru, Japan and Thailand, men are more likely to engage in entrepreneurial activity. For example, the activity rate for US females is 25 percent, but in Thailand 95 percent. Yet, Turkey, a largely Muslim country, has a tiny participation rate of 2.41 percent. It can be argued that the distinctive masculine dominated culture of such countries is historically and religiously rooted and thus strongly influences female participation. Indeed, Roomi and Parrot (2008) argue that many of the problems and challenges faced by Pakistani women entrepreneurs originate from the structurally enforced status of women within an Islamic society. When studying Omani entrepreneurial women's barriers to success, McElwee and Al-Riyami (2003) argue that Omani female entrepreneurship has to be seen in the light of their role in Arab Muslim societies where gender differences are enshrined in Shari'a (the Islamic Law).

Nevertheless, there are considerable changes in the role of women in Muslim countries; this is particularly true in business and in entrepreneurship. The number of females working in business has increased but the evidence to date suggests a large gender gap in venture creation and in business participation more generally in Muslim countries. Female workforce participation in Tunisia is some 27 percent but is characterised by a very limited presence in senior roles. As an example, women have only gained 12 percent of parliamentary seats in the last two elections. There is unfortunately no specific data available about entrepreneurial participation rates. However, even these indicative low female participation rates mask the differences in employment levels by income groups. Although female employment participation levels average 27 percent, the level for low and middle income groups is 42 percent. This suggests that the better off female is much less likely to be in employment and probably much less likely to have their own business. This correspondence between income and labour force participation is likely to be mirrored in entrepreneurship. The GEM study (2006) notes that, internationally but particularly in less well developed countries; a high proportion of female entrepreneurship is necessity enterprise. In such cases women may have been pushed into enterprise to escape unemployment rather than being drawn to entrepreneurship as opportunity (Orhan and Scott 2001). For example, Turkey has the lowest rate of opportunity to necessity early stage entrepreneurship (0.32 percent). This is particularly significant for our study because opportunity entrepreneurship is much more likely to lead to economic growth. Additionally, opportunity enterprises often reflect the desire for independence and individual freedom (Cromie 1987;; Muir 1999). Women are particularly constrained in these terms by the dual role, or double burden of cultural expectations about homemaking.   But the flexibility offered by being your own boss is seen by some as a solution to balance work and family responsibilities (Goffee and Scase 1983; Scott 1986; Moult and Anderson 2004; Buttner 1993; Buttner and Moore 1997; Maysami and Goby 1999). Yet, even with these constraints, starting a business represents an expression of self accomplishment and the desirability of controlling one's own destiny. So an appreciation of well educated young womens' attitudes about becoming their own boss should present a measure of cultural change and impact.

One aspect of cultural shift is education. In comparison with other MENA (Middle East North Africa) countries, Tunisian women are now better educated. The proportion of women who have received a secondary or higher level of education rose from 22 percent in 1994 to 35 percent in 2004. We argue that these well educated women are most likely to be the feed stock of new opportunity driven enterprise. In this study we are interested in female entrepreneurial intentions. Intentions are considered to be a more advanced stage in the behavioural process. Intention as presented in the theory of planned behaviour (Ajzen 1991) and is explained by the perception of desirability (which includes attitude towards entrepreneurship and perception of social norms) and perception of feasibility towards entrepreneurship. Consequently, we will shed some light on differences between male and female in terms of the feasibility, desirability and social norms regarding intention to start a business. We also add supplementary hypothesis about the perception of informational and financial resources availability, thus gauging how entrepreneurial possibilities are perceived.

Thus, we decided to explore female intentions in Tunisia. Analytically, we use chi square tests to capture differences/similarities between the two genders regarding to the intention constituents and then conduct a discriminant analysis, which allows us to pursue the same object but simultaneously considering all relevant variables. The paper is structured as follows: section two briefly explains our hypotheses; section three presents our methodology and section four presents the empirical result, whilst section five concludes.

2. Hypotheses

According to the Ajzen's theory of planned behaviour (1991), attitude toward behaviour refers to the degree to which the individual has a favourable or unfavourable evaluation or appraisal of the behaviour in question. Accordingly, the following hypothesis is considered:

Hypothesis 1: There is a significant difference between genders in the attitude towards starting a business.

According to Shapero (1982), perceived feasibility is the degree to which one feels personally capable of starting a business. Krueger and al (2000) note that feasibility perceptions drive career-related choices, including self-employment as an entrepreneur. Thus:

Hypothesis 2: There is a significant difference between genders in the perception of feasibility towards starting a business.

Subjective norm refers to the perceived social pressure to perform or not to perform the considered behaviour. Thus:

Hypothesis 3: There is a significant difference between genders according to perception of social norm.

Hypothesis 3a: There is a significant difference between genders according to the perception of the opinion of closest family and the opinion of people who are important in the respondent's lives toward starting their own business.

Family situation is assumed to impact career decision. So, individuals with families are hypothesised to be more tied to their current community are less flexible and they evaluate job alternatives more critically (Hooft 2005).Thus:

Hypothesis 3b: There is a significant difference between genders in the perceptions of the impact of future family commitments on the decision to start a business.

Moreover in this paper we expect that attitude toward female entrepreneurship differs relatively to gender. Thus:

Hypothesis 3c: There is a significant difference between genders according to attitude towards female entrepreneurship.

The extant literature suggests that the interpretations of the entrepreneur are of importance when resource availability is considered (Bruno and Tyebjee 1982; Krueger and Brazeal 1994) and that the perceived resource availability is more important than actual resource availability. Moreover, perceived resource availability may influences entrepreneurial intentions (Grundstèn 2004). Thus:

Hypothesis 4: There is a significant difference between genders relatively to their perception of resources availability.

Hypothesis 4a: There is a significant difference between genders in the perception of availability of financial resources.

Hypothesis 4b: There is a significant difference between genders in the perception of availability of informational resources.

3. Sample, data collection and procedure

This study was conducted within 9 faculties in Sousse University (Note1). Our sample consisted of 332 final year undergraduate students from different disciplines. It is representative of the distribution of gender and speciality at Sousse University. To ensure the clarity of wording, we first piloted the questionnaire with 14 final year undergraduate students and made some subsequent improvements to the questionnaire. We launched the survey in March 2007 and completed collecting data in April 2007. The questionnaire was distributed to 350 final year undergraduate students in the classroom and was completed in our presence. From the 350 questionnaires received, 18 containing incomplete responses were removed, reducing the sample to 332 students. Accordingly, our approach to data collection ensured a high response rate. To verify if there are significant differences between men and women concerning some entrepreneurial aspects we have performed the chi square tests using SPSS 11.0. After that, a discriminant analysis was performed using SPAD 5.0.

3.1 Measures

The measure of attractiveness toward starting a business was adopted from Krueger, Reilly, and Carsrud (2000). Hence, we have asked students the following:

Is starting your own business an attractive idea to you?   (1= not at all; 2=neutral; 3= very attractive).

The measure of perceived feasibility towards starting a business was adopted from Krueger, Reilly, and Carsrud (2000). So, the following question was considered:

How practical is it for you to start your own business? (1= not very practical; 2=neutral; 3= very practical).

To measure subjective norm we introduced some changes to Kolvereid's (1996a) question about this variable; we have broken up the item proposed by Kolvereid (1996a) "I believe that my closest family thinks that I should not (I should) pursue a career as self employed" into different parts. This is because usually there are differences in points of views amongst Tunisian family members. Accordingly we asked respondents to answer the five following questions:

(1). I believe that my father thinks that I should (I should not) pursue a career as self employed.

(2). I believe that my mother thinks that I should (I should not) pursue a career as self employed.

(3). I believe that my brother (and/or sister) thinks that I should (I should not) pursue a career as self employed.

(4). I believe that my spouse thinks that I should (I should not) pursue a career as self employed.

(5). I believe that persons who are important to me think that I should (I should not) pursue a career as self employed.

All responses were given on a three point Likert scale (1= I should not; 2= neutral; 3= I should).

Moreover, in order to asses motivation to comply, respondents were asked along three point Likert scale (1= not important; 2= neutral; 3= very important), about the extent to which they cared about the opinions of the different persons cited above when they decide to start their own business.

Unlike Kolvereid (1994 a) who summed all items described above to measure social norm, we decided to consider each item separately in order to pick out where differences exist between females and males relatively to the each element of the perceived social norm. We also added two other variables to the measure of social norm. So we asked students questions about their perception of the impact of future family commitments on their decision to start a business and their attitude toward female entrepreneurship. Therefore the following questions were considered:

(1). Future family commitments may make it difficult for me to start my own business (1= unlikely; 2= neural; 3= very likely).

(2). Indicate to what extent you are approve of the creation of a business by woman (1= not at all; 2= neutral; 3= agree).

Furthermore, using a three point Likert scale, we asked students about their perception of the availability of financial and informational resources, and their assessment of the incentives available in the institutional environment for entrepreneurship in Tunisia. Hence, institutions that economic agents (including entrepreneurs) operate in -political, legal and cultural- directly influence their activity and hence economic development (Baumol 1990; Olson 1996). Consequently, incentives matter and the institutional environment in which the economic agent acts, serves as an incentive structure which guides and influences action, (Boettke and Coyne 2003).

4. Empirical Results

4.1 Descriptive statistics

Respondents consisted of 38.6 percent male and 61.4 percent female undergraduate students. There are more female than male students in higher education in Tunisia. For example in 2005/2006, woman represented 58.1 percent of the total in higher education. The medium age of the sample is 23.36 years old and 94.6 percent are single. The mainstream of the students came from urban areas (78.6 percent). In terms of work experience, 39.5 percent had work experience. Interestingly, more than the half (61.4 percent) have attended an entrepreneurial course.

The great majority of Tunisian students (more than 70 percent) perceive a favourable attitude of all members of their family and of other important persons to them toward starting their own business. The opinion of family and other important people seem playing an important role. Indeed, the overwhelming majority of our respondents (more than 70 percent) consider the opinion of their father, mother, spouse, brother and/or sister as important.

Additionally, more than 70 percent of respondents believe that the incentives and business environment in Tunisia (support structure for start-up, formalities involved in setting up a business, tax and financial incentives, etc) encourage entrepreneurship. This result indicates a perceived success for the government initiatives to promote new business formation. Moreover more than 60 percent of respondents believed that the informational resources at their disposal are favourable for starting a business. Unsurprisingly, a considerable proportion of our respondents appear to be financially constrained. Only 39.2 percent of our respondents reported favourably on the financial resources at their disposal for the creation of their own business.

4.2 Chi square tests results

The key results obtained from the chi square tests are summarized in Table 1 presented below. The chi square test of independence indicates that there is, at a significance level of 5 percent, a relationship between genders and perception of desirability towards starting a business. Hence, hypothesis 1 is supported. Similarly, hypothesis 2 is supported. Therefore, we have found a significant relationship between genders and the perception of feasibility towards starting a business. At the same level of significance (5 percent), the hypothesis 3a was rejected. Thus, and rather surprisingly, we found no significant relationship between gender and the perception of the opinion of the closest family and other important people who are important to the respondents towards starting a business. However, hypothesis 3b was supported. Accordingly, there is a significant relationship between gender and the attitude towards the impact of future family commitments on the decision to launch a business. Although very interested in starting a business, females are still significantly more worried than males about the impact of future family commitments on the realization of their intention to start a business.

Furthermore, there is also a significant relationship, at a 5 percent significance level, between gender and attitude towards female entrepreneurship. Consequently, hypothesis 3c was supported. Men are significantly less taken with the idea of female entrepreneurship. This result suggests that men and women approach entrepreneurship differently and that entrepreneurship is "welcomed" differently according to gender. As a result, entrepreneurship, considered as a mean of economic and social promotion, could be transformed into a vehicle of gender discrimination and so social regression. Hypotheses H4 (a) and H4 (b) were rejected when considering, genders and perception of resources

availability. Therefore, there is no statistically significant difference neither between gender and perception of the availability of financial resources nor between gender and perception of the availability of informational resources.

[Insert table 1]

4.3 Discriminant analysis results

After the Chi squared analysis, we use discriminant analysis, a multivariate technique which allows the study of the differences between two (or more) groups with respect to several variables simultaneously. As it is normal practice, we only consider the variables from the Chi squared results that imply significant differences between genders. The goal of discriminant analysis is to optimally separate groups through constructed discriminating axes (calculated as a linear combination of the initial variables), in such a way that optimal separation of the predefined groups is attained. The linear discriminant equation is constructed such that the two groups are separated as much as possible. Thus, discriminant analysis permits us to examine group differences on considered covariates and to predict group membership from the covariates.

Regarding to the object of our research, we exploit the geometrical principals of this method, by searching axes that best separate the variables to find the significant predicators that best explain the distance between genders in the multivariate space. In its classical form, the method uses continuous variable measurements observed in the two gender groups to highlight aspects that distinguish the groups and to use these measurements to classify new individuals. Thus the explanatory variables have to be independent and normally distributed. Nevertheless, in our study, all the considered variables are qualitative ones. The "Disqual" approaches in Spad software can resolve this problem, in that it implies the construction of factorial axes with the *MCA* analysis. These axes are by construction quantitative variables, unimodales, and symmetric so they satisfy the conditions of discriminant analysis. Then the discriminant analysis is performed on these axes.

Mahalanobis distance and the Hotelling test are used to compare the means of the two samples. More specifically, they are utilised to test the null hypothesis where the two centroids (means in a multivariate space) of the two gender groups are identical. Thus they are the privileged tools for the appreciation of the discrimination quality. Our results show that the probabilities of the Fisher tests tend to 0, so the Mahalanobis distance is significantly different from zero. The Hotelling test also allows rejecting at the significant level of 5 percent the equality of the two centroids. Consequently there is to a significant difference between the two centroides of the two gender groups. Hence the two groups are significantly separated. (See table 2 for the main results of the discriminant analysis).

[Insert table 2]

The quality of the representation is depicted through the percentage of well classified individuals. 190 female in our case are correctly classified according to the obtained discriminant function and only 14 were incorrectly classified. In the total 247 individual were correctly classified with a rate of 74.4 percent of success. The *R2* measures the inter-class variance related to the total variance, the *R2* in our case is equal to 23.28 percent. The coefficients of the discriminate function reflect the impact of covariates on the gender.

We turn now to consider the most discriminant variables. According to the results, the variable "attitude towards female entrepreneurship" is the most discriminant variable between genders. Interestingly, the desirability, feasibility and the attitude towards family commitment plays only a minor role in the explanation of intention differences between genders.

5. Discussion and Concluding Remarks

Although our results show a very promising attitude to entrepreneurship by the young well educated females, it is also very clear from that male and female attitudes to entrepreneurship differ significantly. Thus it seems that in a general sense, entrepreneurship is an attractive option for all young well educated people, there remains considerable cultural constraints for females. Interestingly, we note that feasibility, capacity nor even the point of view of the closest relatives are not responsible for any gender discrimination. It seems that the attitudes of educated young people themselves clearly do not approve of womens' venture creation. Thus, in spite of the fact that they are well educated, the perceived social norms seem to confine female to a more traditional path. Therefore, any policy targeting the encouragement of female entrepreneurship would need to work to change the image female entrepreneurship. In other respects policy seems to be working. Culture, which is notoriously slow to change, seems to be at least beginning to adapt to make female entrepreneurship a possibility. We had expected the role of close relatives, especially fathers to act as a constraint. We anticipated that they would represent more old fashioned attitudes towards discouraging full female participation but that does not seem to be the case. Indeed the contemporaries of our females, their male counterparts, seemed to be more negative towards the idea of female enterprises.

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Notes

Note 1. Sousse is located in the central east of Tunisia, and the third largest city.

Table1. Key results obtained from Chi square tests

Relationship between gender and:	p-value
The perception of desirability towards starting a business. (H1)	0.01
The perception of feasibility towards starting a business. (H2)	0.02
Student's perception of the opinion of closest family and other persons who are important to him toward starting a business. (H3a):	
- Perception of father's opinion	0.27
- Perception of mother's opinion	0.14
- Perception of brother's (or/and sister) opinion	0.14
- Perception of spouse's opinion	0.31
- Perception of opinion of others important a person in respondents lives.	0.14
Perception of the impact of future family commitment on the decision to start a business. (H3b)	0.03
Attitudes towards female entrepreneurship. (H3c)	0.00
Perception of availability of financial resources. (H4 a)	0.76
Perception of availability of informational resources. (H4 b)	0.65

Table2. Key results obtained from discriminant analysis

Variables	Coefficients	Standard error	T student	Significance
Attitude toward female entrepreneurship				
Not at all	3.6365	0.5276	6.89	0.000
Neutral	3.1576	0.6387	4.94	0.000
Agree	-0.9360	0.1049	8.93	0.000
Perception of impact of family commitment				
Improbable	0.4184	0.4544	0.92	0.358
Neutral	0.6354	0. 4667	1.36	0.174
Probable	-0.2384	0.1347	1.77	0.078
Attractiveness toward starting a business				
Not at all	-0.8702	0.8385	1.04	0.300
Neutral	-0.8703	0.7137	1.22	0.224
Attractive	0.1365	0.0823	1.66	0.098
Perceived feasibility toward starting a business				
Not very practical	-1.6179	1.0903	1.48	0.139
Neutral	-0.5570	0.6462	0.86	0.389
Very practical	0.1246	0.0788	1.58	0.115
Intercept	0.0000			

$R^2 = 0.23283$ $F = 12.25320$; $PROBA = 0.000$

$D^2 = 1.27335$ $T^2 = 100.14995$; $PROBA = 0.000$

Theoretical Research on Industry and Finance Combination of Domestic and Foreign Enterprise Group

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Abstract

This paper aims at systematically studying the industry and finance combination from a relatively micro aspect, namely the enterprise group. This paper takes the enterprise group as the subject in research. Based on the combination of industrial capitals and financial capitals, this paper analyzes the concepts, characteristics, and types of industry and finance combination in large enterprise groups that regard the industry as the main body. Besides, this paper makes a theoretical analysis of comparing the industry and finance combinations in domestic and foreign enterprise groups. By this research, the author hopes to discuss how large enterprise groups make best use of resources, economy of scale, and economy of scope and improve the core competitiveness by combining industrial capitals and financial capitals.

Keywords: Enterprise group, Industry and finance combination, Theoretical research

1. Concepts for industry and finance combination in enterprise groups

The enterprise group is a multi-level and multi-functional economic organization that is engaged in trans-national and diversified operation, formed by enterprises that want to extend the business operations, improve self competitiveness, and obtain necessary market shares, consisting of many legal subjects (may include enterprises, non-profit organizations, and social organizations), and taking the property right as the core.

For the sake of requirements for the research, this paper defines the industry and finance combination as: a mode combined by industrial sectors and financial sectors by certain economic ways organically, taking economic profits as the axis. Along with the changes of macro economic institution and financial system, the adjustment of social legal system, and the perfect of enterprise system, its connotations tend to be enriched, regulated, and developed. Therefore, the industry and finance combination is a dynamic historical concept.

The industry and finance combination is a product from commodity economy at certain stage. The separation of credit capitals from industrial capitals and commercial capitals, the separation of deposit subjects and investment subjects, and the mutual dependence of industrial sectors and financial sectors serve as the pre-conditions for the existence and development of industry and finance combination. From the history of industry and finance combination, it not only changes the constitution of industrial capitals, creating a new industry-finance relationship, but also reforms the appearance of social economy thoroughly, speeding up the transformation of social economy from "agricultural economy, to industrial economy, to financial economy". In the world, the industry and finance combination has already become a popular trend of modern market economy.

2. Characteristics of the enterprise group in industry and finance combination

The enterprise groups in industry and finance combination are different in form in developed countries. But in nature they have some similarities. The main characteristics are as follow:

Industry and finance integration. In an industry and finance combination, the financial capitals and industrial capitals are usually in interpenetration. Japan Toyota Motor Corporation, Sumitomo Mitsui Banking Corporation, and Tokai Bank are big stockholders mutually.

Giant scale. After the World War Two, six large enterprise groups (typical enterprise groups in industry and finance

combination) come into being in Japan. They possess considerable child companies and affiliated companies in the world (Ming Huang, 2000, p31-32).

Diversified operation. Diversified operation is an effective way for enterprise groups in industry and finance combination free from risks. Sometimes the enterprise group in industry and finance combination is named after certain industry. However, its real operations cover more than one industry. For example, the products of American International Telephone and Telegraph Corporation are not only communication equipments but also services, foods, natural resources, finance and insurance, cosmetic, and medicine (Hangsheng Xie, 2000, p1-2).

Market internationalization. Due to the internationalization of domestic market and world market, the financial globalization and liberalization, enterprise groups have to operate in both domestic and world markets, making best use of domestic and world resources. Trans-national operations offer wide development spaces and valuable market chances for enterprise groups in industry and finance combination, which facilitate them to form stronger competitiveness in world market.

Industrial monopoly. The enterprise group in industry and finance combination is usually the combination of giant enterprises with strong economic power, which possess certain monopoly positions in one industry (Yan Fu, 2003, p1-2).

3. The type of industry and finance combination by domestic and foreign enterprise groups

Mutual penetration and integration of industrial capitals and financial capitals is one of important nature of modern enterprise group's diversified operation. In Japan there are six large enterprise groups. Bank of Mitsubishi, Mitsui Banking Corporation, Sumitomo Banking Corporation, Fuji Bank, Sanwa Bank, and Dai-Ichi Kangyo Bank are respectively the core enterprise of six enterprise groups. They impact other enterprises in the group by issuing loans and appointing managers. In fact, they control almost all stocks of one group. Chase Manhattan Bank is the financial support of Rockefeller Financial Group. Citibank is the main enterprise in Citicorp. Ford Credit Corporation is the main child company of Ford Motor Corporation.

3.1 The classification according to the way of industry and finance combination

(1) Financial capitals penetrate into an industry. The penetration of financial capitals into the industry starts from late 19th century. Usually, the banking capitalists can control industrial capitals by means of financial institutions, the omnipotent monopoly. The two penetrate into each other and integrate together. Two ways can help to control industrial capitals. Firstly, financial institutions directly buy industrial company's stocks. At present, many financial institutions, such as foreign commercial banks' trust departments, and China Life Insurance Company, hold amounts of large enterprises' stocks. Secondly, financial institutions, mainly investment banks, can control an industrial company by monopolizing the sale of its securities or serving as the intermediary of stock transaction. The typical instances are Morgan Financial Group before the World War II and the California Financial Group after the War.

(2) Industrial capitals penetrate into finance. The profit rate of finance industry is above the average of industrial and commercial industry, which serves as a law of attracting financial groups into financial industry. Rockefeller Financial Group is based on industrial capitals and banking monopoly capitals. According to the degree of penetration, this mode includes two types. Firstly, the enterprise group takes the finance as the backbone industry, starting from industrial capitals, and accumulating capitals by continuously expanding the production. In operating industrial capitals, the enterprise group invests some capitals into finance industry, forming a giant financial core. Finally, the financial core can control a series of industrial and commercial enterprises, forming a monopoly financial group. A typical example is Japan's Mitsubishi Financial Group. Secondly, the finance sector is not the backbone of the enterprise group. In expanding the production, the finance sector monopolizes a batch of important industrial sectors for a long period. Due to the diversified operation, the enterprise group also invests in the finance industry. The typical example is DuPont Financial Group.

3.2 The classification according to the concerned financial fields

(1) Operate commercial banking business. At present Rockefeller Financial Group holds several commercial banks, including Chase Manhattan Bank, Chemical Bank, and New York Bank. Chase Manhattan Bank is core and the main financial support for Rockefeller Financial Group. Based on rich capitals from commercial banks, Rockefeller Financial Group invests in aircraft, telecommunication, and chemical fields widely. Its economic power grows fast and surpasses Morgan Financial Group. For a long period, Rockefeller Financial Group is always the No.1 monopoly financial group in USA.

(2) Operate insurance business. On one hand, by operating insurance business, financial group can get considerable and stable capitals. On the other hand, along with the enlarging scale and increasing investments, self operated insurance can disperse risks and avoid expense for insurance. Therefore, different insurance companies become important members in the financial group.

(3) Operate securities business. Foreign large financial groups usually hold one or more security companies, by which they can issue securities of industrial companies. Then, a series of companies will be under the control of the financial group. Morgan Stanley is always the important investment bank that controls amounts of industrial companies for Morgan Financial Group.

(4) Operate credit business. Although to operate commercial banking business is restricted in many aspects, to start credit business can also generate considerable capitals for one financial group. Therefore, some financial groups that are engaged in amounts of retailers usually invest in credit business.

3.3 The classification according to the combination of industry and finance

(1) Set up financial institutions directly. Financial groups usually set up banks, insurance companies, and securities companies directly according to the law. This kind of financial institutions can be formed independently. In fact, they are based on a financial group's certain functional department, such as the trust department or the banking department. By this way, the financial group can control the financial institutions effectively. However, if a financial group is unfamiliar with financial business, it will be hard for it setting up financial institutions directly. In addition, many countries regulate strict requirements for enterprises setting up financial institutions.

(2) Hold stocks of present financial institutions. By buying financial institutions' stocks directly, financial groups can control commercial banks and other financial institutions, and by which control other companies. By this way, financial groups can invest in present financial institutions according to self powers. They can focus on their own business. Beside, they can increase or decrease investments based on own development strategies and practical conditions. However, this method can not realize an effective control over financial institutions. All large financial groups compete for influential financial institutions. They have to spend tremendous capitals in controlling financial institutions.

(3) Appoint managers. By appointing managers, financial groups can control banks by enterprises, and then control enterprises by banks, forming a multi-level penetration of personnel.

(4) Credit relation. Along with the enlarging scale of enterprise, the proportion of self capitals to total capitals tends to decrease. The external capitals are mainly from some big banks, forming so-called "series loans". Then, it forms big banks-centered financial groups (Wenguang Zhao, 2004).

4. The comparison of China and foreign enterprise groups' industry and finance combination

Among the modes discussed above, some enterprise groups may choose different modes in dealing with different financial enterprises or different financial fields. All the modes have different advantages and disadvantages. They set up different requirements for enterprise groups. So, enterprise groups can not adopt all modes. With fixed goals, enterprise groups should select the most proper mode to operate financial business. The selection is affected by two aspects. The first is the strengths of the enterprise group. The second is the strict supervision system regulated by the government on financial industry, especially the strict market entrance standard.

Although enterprise group's financial company operates only more than one decade, it gains a wide acceptance from enterprise groups because it can help to save financial costs and internal transaction costs, and improve the use efficiency of capitals. Presently, to form a financial company can benefit the enterprise group to a great degree and has minimum risks. According to the spirits of Administration of the Finance Companies of Enterprises Groups Procedures issued recently, the most important condition for enterprise groups applying for setting up finance companies is the correct positioning of finance companies, enterprise groups' scales and strengths, and business situations. First of all, finance companies are special financial companies that serve members in enterprise groups. They can not offer financial services for others. Therefore, if an enterprise group hopes to start wider financial businesses, it is not the best choice. Secondly, although the new procedure regulates lower market entrance standards than ever, it still sets up higher requirements for enterprise groups' business scales, credits, and operations (include industrial development and the cash flow). If an enterprise group fails to reach relevant standards, it can not adopt the mode. Furthermore, according to the latest requirements, except the enterprise group that is approval by China Banking Regulatory Commission, all finance companies must associate with foreign investors with rich specialized experiences. In other words, to set up a new finance company must introduce a qualified foreign investor. As a result, the enterprise group has to seek for a proper foreign partner in order to set up a finance company.

As investing in external financial companies, the simplest way is to buy stocks. In this mode, enterprise groups face fewer restrictions. By associating with partners that have complementary resources or same wish for operating financial business, enterprises can set up financial companies by cooperation. That is a better way for enterprise group realizing industry and finance combination. At present, with policy permission, enterprise groups can set up financial enterprises, such as trust companies, security companies, and insurance companies, by buying in stocks. Besides, enterprise groups can start funds management companies indirectly by trust companies or security companies. As for forming commercial banks, enterprise groups must get stricter examination and approval. Because financial regulation imposes stricter management on industrial capitals controlling financial companies, in order to escape from policy restriction, this mode

is widely adopted by powerful enterprise groups that tend to invest more in financial industry. Although this mode means more difficulties in operation, it realizes an essential control over financial companies. However, on the other hand, it adds more difficulties and complexity to regulation.

Presently, some enterprise groups have already possessed the base for becoming the financial holding enterprise after years of operating in financial fields. Many professionals in financial industry agree that the most appropriate for practicing financial holding is not the industrial group but financial institution. As a matter of fact, this mode does not only require that the enterprise group realizes the holding of several financial companies but more important, the enterprise group can support the right operation and development of these financial companies. Therefore, the enterprise group should possess rich capitals and be capable of integrating financial resources and controlling risks. Then, it can achieve the coordinative development of industrial sectors and financial sectors in the group. Today, due to the poor experiences in financial industry and the short of professional experts, China's domestic enterprise groups could not reach the goal. Therefore, as for this kind of enterprise groups, the practical way is to accumulate experiences and capitals, and cultivate highly-qualified professional talents by practicing and developing in some financial fields, building up bases for the future. Meanwhile, in the financial regulation and supervision aspect, considering the control of risks, the regulation department sets up strict controls over enterprise groups executing the holding on several financial companies.

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Determinants of MDF Exports: A Panel Data Analysis

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Abstract

This study analysed the factors influencing the exports of Medium Density Fibreboard (MDF) with the aid of the panel data approach procedures. The analysis was carried out with the data collected on MDF exports over 10 years (1996–2005) and across 28 countries all over the world using the panel data analysis in estimating the MDF exports with various factors. The result shows that the changes in export quantities of MDF are significantly determined by export price and exchange rate at 1 percent and 5 percent respectively. However, average world GDP is not significant in influencing exports demand of MDF. On the other hand, the Hausman test of the random effects and fixed effects specification give the evidence that the random effects specification is preferable in this model.

Keywords: MDF exports, Panel data, Panel OLS, Fixed effects, Random effects.

1. Introduction

Medium density fiberboard (MDF) is a non-structural wood-based panel that is composed of wood fibres bonded together with resin under the heat and pressure (Ropandi *et al.,* 2005). In Malaysia, most MDF plants depend on the supply of rubberwood as their feedstock. On the other hand, in other countries there are different types of raw material. Important raw materials for MDF include radiate pine (New Zealand), mixed tropical species (Japan), rubberwood (Thailand), bagasse (Pakistan, China and Thailand) and cotton stalks (India) (Wardworth, 1995). However, nowadays Malaysia for example not only used rubberwood as its raw material but started to use other source like Acacia, mixed tropical species and empty fruit branches. With the declining of raw material supply that has faced by some major exporting countries, the MDF industry has to search for a new fibre sources in order to sustain their operations in future. Hence, it is interesting to know the behaviour of MDF exports across among the exporting countries. Some of these countries seem to show that their MDF exports have keep on increasing despite the issue of raw material.

On the other hand, MDF has emerged as price competitive alternative to the more traditional products such as plywood, particleboard and hardboard. With similar characteristic to plywood products, their greatest advantage is that low quality and low value raw material (including non-wood fibres) can be turned into high value and high quality wood-panels. This clarifies why their production cost are about 50 percent lower (Adhar, 1996).

Table 1 shows the total volume of MDF exports in the world markets. There are 28 countries which are exporting the MDF product in the world. Based on the volume of their MDF export, there are several major exporting countries like Germany (3,335,900 m^3), France (1,145,655 m^3), Malaysia (1,065,000 m^3), Canada (903,000 m^3), New Zealand (646,000 m^3) and Thailand (629,600 m^3) in 2005. Hence, Germany was the largest of MDF export in 2005 with 3,335,900 m^3 while Malaysia was the third largest behind France.

MDF is used mainly for partitions and interior décor work as well as for furniture-manufacturing. According to Anon (2006), Chinese MDF might be cheap compared to Malaysian boards but its low quality has resulted in poor market perception among both importer and end-users. However, the quality of Chinese MDF is reported to be improving. The export of MDF from Malaysia had grown steadily during the period 1996-2005. Similarly, in general, the global export demand of MDF is increasing rapidly during that period. In addition, Anon (2006) claimed that MDF capacity worldwide has increased significantly to 50 million m^3 by the end of 2006.

On the other hand, in the literature on forest economics, lack of the study has been discussed on the specific forest products mainly on MDF product. Most studies mainly focused on the impacts of exchange rate changes on forest products trade volume or prices (Adams *et. al.,* 1986; Buongiorno & Uusivouri, 1991; Sun & Zhang, 2003 and Bolkesjo & Buongiorno, 2006). For example, Adams *et. al.,* (1986) use a structural econometric model (i.e., two-stage least squares) to analyse the role of exchange rate on the North American softwood lumber market. They concluded that an increase in exchange rate played a key role in the expansion of Canadian share of US market for the period of 1950-1983. Recently, Bolkesjo & Buongiorno (2006) adopt the vector autoregressive (VAR) model of panel data analysis to examine the short and the long run impacts of exchange rate changes on US trade in forest products throughout forty six countries with the quarterly time period from 1989 to 2004. They found that a change in the value of US dollar significantly affects forest products trade in both short and long run.

Relatively little attention has been paid to investigate the impact of exchange rate changes on the trade balance. The earlier study by Kaiser (1984) has investigated the effect of changes in exchange rate on US forest products trade balance. He found that, the depreciation of the US dollar is the most effective trade policies to increase US forest products exports and thus stabilises the US trade balance. Most recent study by Baek (2007) examined the dynamic effects of exchange rate changes on US trade balance in forest products. He used ARDL model to examine the various forest products such as softwood lumber, hardwood lumber, panel/plywood product, logs/chips product and does not include MDF product. From his study, it is found that real income (domestic and foreign country) and exchange rate are important determinants of the US forest products trade with Canada.

Hence, as to add into the forest-related literature of the forest products trade particularly on the MDF exports, the purpose of this study is to investigate the economic determinants on MDF exports with regards of 28 exporting countries in the world from 1996 to 2005 by using panel data analysis. From this analysis, we can see the export markets behaviour in general with respect to the major explanatory variables that will influence the export demand of MDF in the world.

2. Methodology

In this objective, panel data is more relevant because it contains the necessary mechanism to deal with both inter-temporal dynamic behaviour and the individualistic of the countries. For example, it allows controlling for *heterogeneity bias* due to the confounding effect of time-invariant variables omitted or hidden factors from the regression model. Besides, this longitudinal approach provides additional information and richer source of variation through utilisation of a large number of data points, in which increasing the degrees of freedom and reducing the collinearity among explanatory variables, thus improving the efficiency of econometric estimators (Hsiao, 1986). All these benefits may allow stronger conclusion than findings derived from use of static cross-sectional data or time series setting alone.

In addition, this objective would obtain the estimates of the parameters of the regression model using the standard pooled OLS technique. Then a few assumptions will be relaxed and simultaneously incorporate the countries fixed effects and time effects into the model. A diagnosis check will be carried out on the analysis to ensure that the basic OLS assumptions related to heteroscedasticity, autocorrelation and multicollinearity are not violated.

2.1 Pooled OLS Estimation

This study hypothesised that the explanatory variables have a linear relationship with the export and import of a country. Since this objective used panel data, it is not only enables to consider both time series and cross sectional characteristic of sample, but also it helps to identify the sources of possible mixed effects and the importance of each explanatory variable in influencing the export and import choice. At this initial stage, the regression model is assumed to have a constant intercept and slope coefficients. The relationship can be expressed as follows:

$$Y_{it} = \alpha + X_{it}\beta + \varepsilon_{it} \tag{1}$$

for   i = 1,2,……N.

t = 1,2,……T.

where;

i. Y_{it} is the dependent variable (leverage) pooling N cross sectional observations and T time series observations;

ii. α is the intercept or constant;

iii.   Vector X_{it} contains K explanatory variable for country i in year t;

iv.   Vector β contains K regression coefficients or parameters to be estimated;

v. ε_{it} is the error term or disturbance term and by assumptions E(ε_{it}) = 0 and Var(ε_{it}) = σ_ε^2.

With the assumption that the disturbance terms ε_{it} are independent and identically distributed and have zero means, E(ε_{it}) = 0 and constant variances Var(ε_{it}) = σ_ε^2 and all the other classical assumptions hold. Equation (1) above can be directly estimated by usual pooled OLS approach. Under such conditions, the pooled OLS would yield an unbiased, consistent and efficient or Best Linear Unbiased Estimator (BLUE) estimator of β. It should be noted that this study will use the balance panel data. But for simplicity, it is assumed that T is the same for all countries to keep the formula notation clear and simple. This regression model consists two separate equations namely export and import equations. These equations can be expressed as follows:

$$\ln EX_{it} = \beta_0 + \beta_1 \ln XP_{it} + \beta_2 \ln AWGDP_{it} + \beta_3 \ln ER_{it} + \varepsilon_{it} \tag{2}$$

where EX_{it} denotes the export of MDF, XP_{it} export price of MDF, $AWGDP_{it}$ average world GDP, ER_{it} exchange rate, ε_t the disturbance, ln represents natural logarithmic transformation and β_0 is intercept. The indices *i* and *t* denote country and time respectively.

2.2 The Data

This study will use the annual data from 1996 to 2005 for the 28 countries as stated earlier in Table 1. The volume of exports for these countries of MDF product was obtained from Food Agriculture Organisation (FAO) compact disk. The real income for each of country and average world real income are measured as real GDP index (2000=100) and are taken from the International Financial Statistics (IFS) published by the International Monetary Fund (IMF). The exporting countries–United States (US) real exchange rate (ER) is gathered by the Economic Research Service (ERS) in the US Department of Agriculture (USDA). Since the exchange rate is expressed as domestic exporting countries currencies per US dollar, a decline in exchange rate indicates means a real depreciation of the US dollar. We selected the domestic currencies per US dollar exchange rate because typically the export of MDF product has quoted in US dollar. Finally, it is noted that, since all variables are converted to natural logarithms, the estimated coefficients can interpreted as elasticities.

3. Results of Analysis

Table 2 presents the panel OLS estimates of MDF exports with various explanatory variables and analyse their relationships. Besides, random effects and fixed effects estimated are also carried out and compare them with the panel OLS specification. At this point, we assume a static model in levels and test whether the structure of error term is adequate captured. Since, panel data typically exhibit serial correlation, cross-sectional correlation and groupwise heteroskedasticity (Greene, 2000: 592-608), we expect to find such a structural residuals.

The panel OLS in Table 2 reports the coefficient and the level of significant of the explanatory variables namely export price of MDF, average world GDP and exchange rate in determining export of MDF. The results reveal that export price of MDF and exchange rates are statistically significant at 1 percent and 5 percent respectively. Further, it shows expected sign with negative sign for export price and positive sign for exchange rate. This result suggests that as the export price of MDF increase the export demand of MDF will decrease. On the other hand, for the exchange rate, the result suggests that as the depreciation of the domestic currency, the export demand for MDF will increase. This implies that the exchange rate of the currency can influence the total volume of export demand. However, average world GDP is not significant in influencing MDF exports. This implies that the level of wealth of the nation is not considered as a significant factor.

An alternative approach is to estimate a random effects model, which is presented also in Table 2. This estimator is a weighted average of the within and between estimator and is based on two (related) assumptions: First, the intercepts are of no substantive relevance, which is the case in a large N, small T panel and second, the fixed effects and the regressors are uncorrelated (see Baltagi, 2001: 15). Hence, our result shows that we fail to reject random effects *a priori*

because of the large number cross sections. This implies that the Hausman (1978) test the random effects specification give the evidence that the random effects specification is preferable.

The choice between fixed effects and random effects estimators continues to generate a hot debate among econometricians (Baltagi *et. al.*, 2003). Mundalk (1978) argued that the random effects model assumes exogeneity of all the regressors and the random individual effects. In contrast, the fixed effects model allows for endogeneity of all the regressors and the individual effects. This all or nothing choice of correlation between the individual effects and the regressors prompted Hausman & Taylor (1981) to propose a model where some of the regressors are correlated with the individual effects. More specifically, the individual means of the strictly exogenous regressors are used as instruments for the time invariant regressors that are correlated with the individual effects, see Baltagi (2001). The choice of the strictly exogenous regressors is a testable hypothesis. Despite these debates, most applications in economics since the 1980s have made the choice between the random effects and fixed effects estimators based upon the standard Hausman test (Baltagi *et. al.*, 2003).

Owing to the diagnostic tests, the model is well fitted as it passes all the diagnostic tests. The diagnostic tests reveal no evidence of misspecification and additionally, we find no evidence of autocorrelation. The root mean square and Theil inequality test results have also given strong evidence that the equation is stable between the dependent and all independent variables (Figure 1).

4. Conclusion

The purpose of this study is to investigate the economic determinants of MDF exports with the export price, exchange rate and average world GDP for a panel of twenty eight countries over the sample period 1996-2005. The twenty eight countries considered in this study are known as exporting countries on MDF product. Our results indicate that the economics determinants of MDF export are export prices and domestic exchange rate. Of which the export price are most significant impact on export demand. However, the income variable in this study shown not significantly influences the export of MDF product. On the other hand, based on the Hausman test that carried out in this study, we can conclude that all the explanatory variables are exogenous and reflect variation across the twenty eight exporting countries and constant with time.

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Table 1. The MDF exporting countries in the world (volume in cubic meter)

Countries	1996	2000	2005
Argentina	50,900.00	46,000.00	346,000.00
Australia	89,700.00	297,000.00	461,000.00
Austria	35,100.00	138,000.00	48,000.00
Brazil	4,900.00	3,000.00	84,000.00
Canada	**157,000.00**	**746,923.00**	**903,000.00**
Chile	277,000.00	215,000.00	229,000.00
China	15,200.00	184,702.00	231,613.00
Czech Republic	47,400.00	58,000.00	38,000.00
Finland	4,000.00	2,000.00	1,665.00
France	**316,000.00**	**500,704.00**	**1,143,655.00**
Germany	**300,000.00**	**1,999,000.00**	**3,335,900.00**
Indonesia	9,400.00	158,000.00	300,000.00
Ireland	170,000.00	364,000.00	362,652.00
Italy	286,000.00	463,000.00	260,000.00
Japan	8,700.00	5,000.00	5,000.00
Korea, Republic of	16,000.00	33,000.00	15,000.00
Malaysia	**368,000.00**	**458,000.00**	**1,065,000.00**
Netherlands	48,000.00	47,000.00	118,700.00
New Zealand	**341,000.00**	**598,000.00**	**646,000.00**
Poland	100,400.00	180,800.00	513,600.00
Portugal	199,700.00	240,169.00	272,000.00
Romania	400.00	31,000.00	272,000.00
Singapore	4,200.00	5,000.00	12,800.00
Sweden	10,000.00	18,690.00	6,510.00
Thailand	**3,500.00**	**340,000.00**	**629,600.00**
Turkey	8,000.00	9,000.00	128,000.00
United Kingdom	53,000.00	76,000.00	137,465.00
United States of America	114,000.00	242,000.00	252,000.00

Source: FAO CD ROOM

Table 2. Regression results for the MDF exports markets model

Dependent Variable: MDF exports			
Explanatory variable	Panel OLS	Fixed Effects	Random Effects
Export price	-0.661***	-0.643***	-0.60***
	(0.00)	(0.00)	(0.00)
Exchange rate	0.718**	0.418	0.350
	(0.02)	(0.20)	(0.28)
Average world GDP	1.137	5.041***	5.044***
	(0.78)	(0.00)	(0.00)
Constant	-16.932	-121.24***	-120.86***
	(0.88)	(0.00)	(0.00)
AR(1)	0.9397	-	-
	(0.00)		
R-squared	0.88	0.81	0.80
F-statistic	465.85	-	-
	(0.00)		
Durbin-Watson stat	2.0274	-	-
Hausman test	-	0.5116	

Notes: ***Significant at 1 percent, **Significant at 5 percent, *Significant at 10 percent. Parentheses are *p*-values.
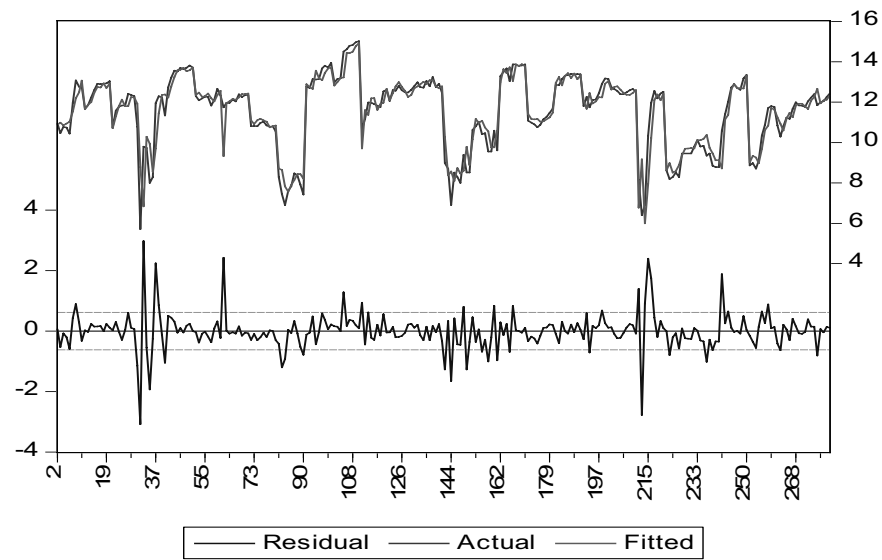
Figure 1. Actual, fitted and residual graph for MDF export demand

A System Dynamics Model for Analyzing Researchers' Behavior in Fee-based Online Knowledge Markets

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Abstract

The purpose of this paper is to develop a simple dynamic model to analyze researchers' interest in answering questions for an online question and answer (Q&A) knowledge market. With use of a System Dynamics model, an online knowledge market can be modeled as a marketplace where consumers ask and researchers answer questions to make knowledge transactions. In this market, consumers price their questions to acquire answers, and a company maintains the online knowledge market by determining the optimal price allocation to researchers. This paper focuses on the design of a simple model based on Zhang & Jasimuddin's equation that represents the dynamics of researchers' interest in answering questions in a specific kind of online knowledge market. The model shows this behavior of researchers. Furthermore, implementation of this model results in generating new and useful insights about the policy option analysis for developing new strategies in same knowledge markets.

Keywords: Online knowledge market, System dynamics model, Pricing strategy, Question & answer (Q&A) markets

1. Introduction

In recent years, along with the development of Internet technology, eCommerce has become increasingly modern. This development has changed the shopping behavior of customers as well as the ways that firms are doing business. A recent eGlobal report indicates that as access to the Internet improves all over the world, the number of active (those who are online at least 1 hour per week) users is more than about 640.2 million in 2004 (eGlobal Report, 2005). The TNS report also shows that U.S. is the nation with the greatest proportion of Internet users in the world who are engaged in online shopping. A helpful categorization of the key important factors for Internet shopping is identified by Shim et al. (2001) including transaction services (security, product guarantees, safety, privacy, and service), convenience (overall speed of Internet shopping and freedom from hassles), sensory experiences (the social, personalizing, and recreational experiences of shopping) and merchandise (product information, comparative shopping opportunities, and variety of merchandise choice).

Matson et al. (2003) depicted that in almost every organization there is an internal knowledge market where knowledge experts and knowledge seekers interact electronically to exchange their knowledge continuously. In these special markets, there is not any transaction of physical goods, but the buyers set their prices for their knowledge, and sellers choose from available offers from buyers to make transaction.

Nowadays, there are a variety of online knowledge markets available in the Internet, like Experts-exchange.com, Intota.com, InfoRocket.com, Kasamba.com, Knexa.com, Keen.com, eBrainx.com, Liveadvice.com, Allexperts.com, and Swapsmarts.com. For example, Experts-exchange is specialized service for computer technology related issues

such as software programming, device troubleshooting, and etc.

Among these markets, Google Answers (GA) is a fee-based information market where experts sell their expertise to askers for a price quoted by the askers. It is one kind of knowledge market or a kind of question-and-answer service (Roush 2006). At GA, customers post their questions and set a price between $2 and $200 for that question. Free sharing of information in the form of comments takes place alongside the information trades by other registered users. Secondly, researchers which are hired by Google browse all the posted questions and choose whether or not to answer the questions based on their own judgments. A question can only be answered by one researcher and once the answer is complete, 75% of the price for the question belongs to the researcher, and the other 25% will remain to Google as its maintenance fee.

This paper presents a simple system dynamics model to depict and analyze the dynamics of researchers' behavior in this kind of knowledge market. The rest of the paper is sets out as follows. The next section considers the previous literature on knowledge markets and system dynamics methodology. Following that, are explanations about the model. Finally, the results are depicted and one scenario is analyzed.

2. Knowledge Markets

Just like any other market, knowledge market is a market in which some transactions are being made with this difference that goods are intangible. There is buyer and seller as the same as tangible goods market, where they can get the satisfied price by bargaining back and forth, and where there is an intermediary who can promote trading (Moodysson & Jonsson, 2007; Winter, 2003). Knowledge market is defined as "an environment where buyers and sellers can trade their know-how within defined pricing and trading rules" (Desouza, et al., 2005). Because both buyers and sellers in knowledge market believe they can get some forms of benefit, some trading exists in knowledge markets (Merx et al., 2005). Despite the fact that there is not cash flowing in trading, there is price system in the market. It is the effective operation of knowledge market, which brings the knowledge flowing inside the knowledge net and realizes the sharing of knowledge (Huggins et al., 2008).

Davenport and Prusak (1998) introduced the concept of internal knowledge market within organizations, and they propose to employ the necessary information technology support as well as the crucial encouragements to build an effective internal knowledge market for knowledge transfer in organization.

After the early idea of knowledge market within organizations, Ba (2001) express that knowledge components can be optimally traded with a Grove-Clarke-like mechanism within different bundles in an internal organization market so that a firm can optimally choose the knowledge bundles for investment. Following that, Desouza et al. (2005) develop a mathematical analytics to show the feasibility of the market mechanism for knowledge management in organizations. Bakos (1997) discusses an online marketplace as a special type of electronic marketplace and proposes that electronic marketplaces reduce inefficiencies by lowering buyers' cost to obtain information about sellers' prices and product offerings.

Several studies (Edelman, 2004; Zhang & Jasimuddin, 2008; Kenney et al., 2003; Chen et al., 2008; Rafaeli et al., 2005) have recently attempted to study the impact and implications of an online knowledge market from the inspirations of Google Answers. However, these studies have not investigated the working mechanism behind an online knowledge market, which is, the pricing strategies of consumers and Google who maintains the online knowledge market.

Zhang & Jasimuddin (2008) suggest a mathematical and non-dynamic model for investigating the working mechanism behind an online knowledge market, that is, the pricing strategies of consumers and the firm who maintains the online knowledge market.

3. System Dynamics

The idea of System Dynamics (SD) was first introduced by J. W. Forrester (1961) in the 1960s at the Massachusetts Institute of Technology (MIT). SD was one of the very first responses to the insufficiency of Operation Research (OR) and other management science methodologies for solving complex problems with large number of variables, nonlinearity and human intervention. Based on former models and tools used by control engineers to analyze the stability of mechanical and electrical control systems (Tustin, 1953), he developed a set of tools and a powerful method for modeling and analyzing complicated problem situations. SD is mainly built upon traditional management of social system, cybernetics and computer simulation.

SD combines human mind and the power of computer in order to learn about dynamic complexity, limited information of problem situation, confounding variables and ambiguity, bounded rationality, flawed cognitive maps, wrong inferences about dynamics, and judgmental mistakes. In SD viewpoint, the behavior of a system is basically caused by its structure and policies. Thus, the structure of an organization is best represented with underlying flows of different resources as well as a variety of feedback loops and delays.

A SD model is normally consists of "causal-loop diagram (CLD)" and "flow diagram". The casual relationship shows

that one element is affecting another one. A CLD is used to model this king of causality relationships. CLD requires additional positive (+) and negative (-) polarity to show the feedback structure of the related elements. For example, as shown in Figure 1 if the "number of employees calling sick" increases then the "number of employees available to work" would decrease. On the other hand, if the "number of employees calling sick" decreases then the "number of employees available to work" would definitely increase.

In Figure 1, the positive polarity is shown. We can also have a negative causal relationship as depicted in Figure 2. In this example, we consider that if the "number of employees available to work" increases then "Productivity" would increase. And also if the "number of employees available to work" decreases then "Productivity" would decrease too.

Another important diagram which SD uses to show the behavior of system is the "Stock-flow Diagram (SFD)". SFD shows the two variables which are required for simulating all elements inside a system, "level" and "rate". The level refers to a given factor within a specific time period, e.g. inventory level on March 2008 and so on. But, the rate reflects the extent of behavior of a system, such as hourly production amount, and monthly sales turnover.

4. System Dynamics Model of Online Knowledge Market

This section outlines a dynamic model which is build based on the previous analytical model by Zhang & Jasimuddin (2008) and shows some initial results for further analysis. In this model, because customers do not know before setting the prices, who will ultimately answer their questions, they may always price their questions as suggested by the guidelines of Google Answers which is as follows: "The more research required to find an answer, the higher the price you should set for your question... Setting a price too low to compensate for the time required may result in your question not receiving an answer. The more you are prepared to pay, the more likely your question is to get answered quickly." This guideline can represented a simple causal structure which is depicted in Figure 3.

Figure 3 shows that a question with more research required should be placed with a higher price, or in other words, an increase (decrease) in a question's required research causes an increase (decrease) in the price of that question. Along with this fact, an increase in price would also cause an increase in the chance of getting answers quickly.

When a question is posted on the knowledge market, all the researchers will have the same chance to answer it. On the other hand, a more difficult question requires a researcher to have a higher knowledge level or apply more attempts to answer it. A question m has its type q_m of difficulty which is distributed with the probability function $H(q_m)$ between 0 and 1. As proposed by Zhang & Jasimuddin (2008), a researcher tries to maximize his(her) total surplus by determining whether or not to answer the questions he(she) observes on the market. For a specific question m priced at p, if he(she) answers it, a researcher will get a net payoff (total payoff) as

$$\pi_r = \alpha p - \theta(p, k_i).q_m \qquad\qquad (1)$$

Where α is the proportion of price which is allocated to researchers for answering each question with price p and $\theta(p, k_i)$ is the disutility a researcher with knowledge level k_i will encounter by answering this question, including the effort cost and the risk of getting a bad assessment. Figure 4 depicts the causal structure of researchers' behavior.

Based on Equation 1 and its description, Figure 4 shows the causal structure of researchers' behavior and also demonstrates the influences over the total payoff. As depicted, a researcher with more knowledge would have more disutility to answer a question, and thus he(she) should have less total payoff for choosing the posted question. On the other hand, the price of a posted question has two direct and indirect influences upon total payoff. The indirect influence is when a customer sets a higher price for her(his) question, thus a researcher with a determined level of knowledge would have a more disutility to answer that question. Also the direct influence is when a question has a higher price, researcher would have more total payoff about that question because they are going to be paid more. The other two causes are the proportion which goes to the researcher and question's complexity level. When researcher's proportion is higher, he(she) would have paid more for answering the question. Finally, a more complex question would be of little interest to the researchers, though it would cause in lower total payoff.

Figure 5 depicts a simple stock-flow diagram for the causal structure which is shown in Figure 4 and its related equations are given in Appendix. This model represents the behavior of researchers' interest in locking a question and thus starting to find the answer in a limited time. In this model, it is assumed that there are 100 questions which are posted to the knowledge market and researchers decide weather to lock it or not in every 15 minutes in a period of 100 hours. This means that at every 15 minutes, a researcher came to the market and decides to lock a question. Total payoff is the key concept which determines the locking activity in this simple model. Along with that, knowledge level, complexity of question, and proposed price are important issues which are randomly generated for understanding the behavior. Proportion of researcher is a user-defined variable and it is set to 0.75 which means that 3/4 of the question's price goes to the researcher. The model is simulated and the results are shown in Figures 6, and 7.

As depicted in Figure 6, this simulation shows if a researcher is free every 15 minutes in a period of 100 hours and other

elements are randomly generated, only 43 questions out of 100 are locked to be answered. It is now possible to change the proposition variable and study the behavior of the market. Figure 8 shows the simulation results under this simple scenario.

This results shows that when the proportion of the researcher is set to 0.6, 075 (default), and 0.9, and all other variables are the same, locked questions are 36, 43, and 48. As depicted, the model is very sensible to the proposition variable and how a firm which owns the market can change the locking rates.

5. Further Research

The next step is to develop this model with more dynamic elements of this market such as risk, reputation, tips & stars, income, answer time, and answer quality. Figure 9 shows these elements in a more detailed causal loop diagram.

For a researcher, accepting (or locking) a question with a higher price would have cause in a more risk for answering that. This is often because of the customer's knowledge or expertise in the question's field and also this fact that customers know that a more complex question, needs more price. Accepting more risk would cause danger in reputation, and also more tips and stars which goes to a researcher causes in more reliability of that researcher.

After drawing a developed causal loop diagram for the market, a formal and quantitative model of the system should be built for analyzing the sensitivity of the parameters, and then doing some policy experiments. Therefore, a simulation model with complete equations, parameters, and initial conditions should exists in order to direct real world experiments with different parameter values and initial conditions, which often impractical and infeasible in real world due to a number of reasons. With use of this causal loop diagram, a formulized simulation model which is called stock-flow diagram is build as shown in Figure 10.

Future research by the authors will focus on developing, formulizing, and simulating this dynamic model over time that enables buyer, sellers, and the owners of online knowledge markets to study the behavior of market in different condition. Furthermore, there are many undefined parameters in this model which should be determined by field studies and other contributions.

6. Conclusion

The simple dynamic model to analyze researchers' interest in answering questions for an online question and answer (Q&A) knowledge market was simulated for a specific kind of pricing in a knowledge market whereby some parameters are generate randomly and the basic model is based on Zhang & Jasimuddin (2008)'s equation. The results are briefly discussed and the behavior of the model was analyzed under a specific scenario. The simulation was run for 100 hours. The model showed the behavior of locked/open questions. Implementing this model resulted in new and useful insights in the future of possible policies for developing new dynamic models for modeling and simulation of online question-and-answer (Q&A) knowledge markets.

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Appendix

System dynamics model equations:

01) Complexity of Question=

RANDOM UNIFORM(0.01, 1, 0.1)

02) FINAL TIME = 100

Units: Hour

The final time for the simulation.

03) INITIAL TIME = 0

Units: Hour

The initial time for the simulation.

04) Knowledge Level=

RANDOM NORMAL(0, 1, 0.5, 0.1, 0.1)

05) Lock Rate=

IF THEN ELSE(Total Payoff>0, IF THEN ELSE(Questions>0, 1, 0), 0)

06) Locked Questions= INTEG (

+Lock Rate,

0)

07) Proportion of Researcher=

0.75

08) Proposed Price=

RANDOM UNIFORM(0.01, 1, 0.1)

09) Questions= INTEG (

-Lock Rate,

100)

10) TIME STEP = 0.25

Units: Hour [0,?]

The time step for the simulation.

11) Total Payoff=

Proportion of Researcher*Proposed Price-(Knowledge Level/Proposed Price)*
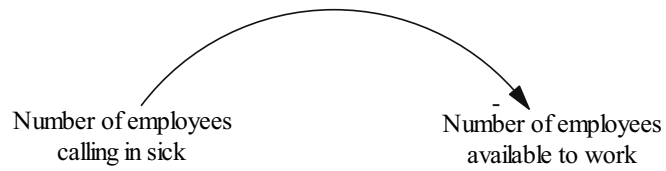
Complexity of Question
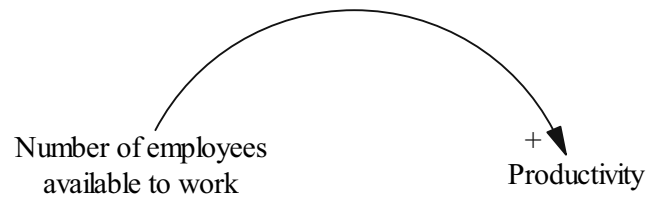
Figure 1. Positive causal relationship
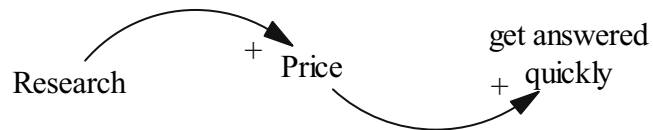

Figure 2. Negative causal relationship

Figure 3. Causal loop diagram of determining a base price for a question by customer
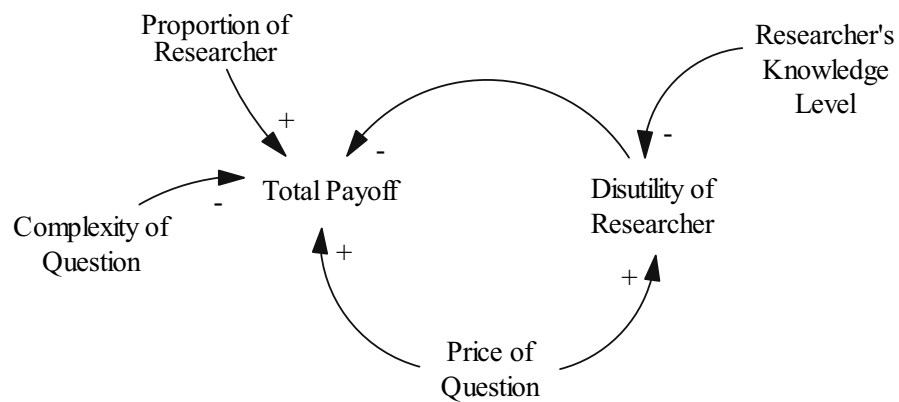

Figure 4. Causal loop diagram of researchers' behavior

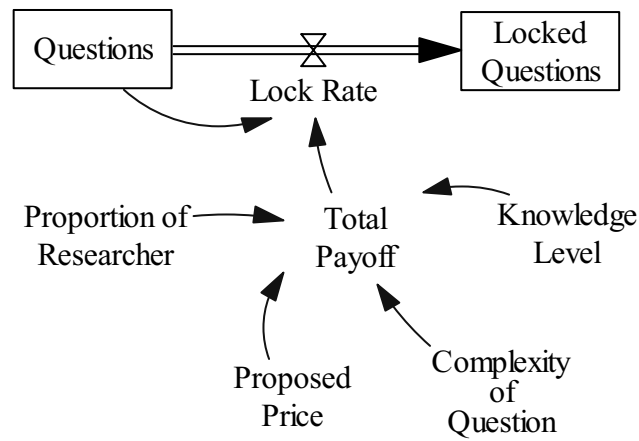Figure 5. Simple Stock-flow diagram (simulation model) of researchers' interest in locking a question
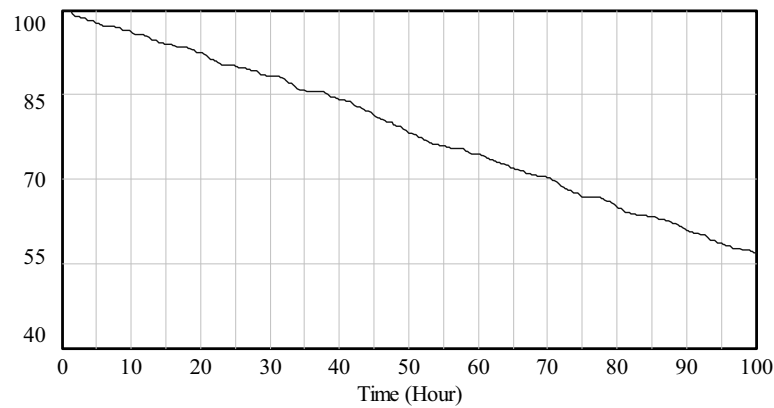

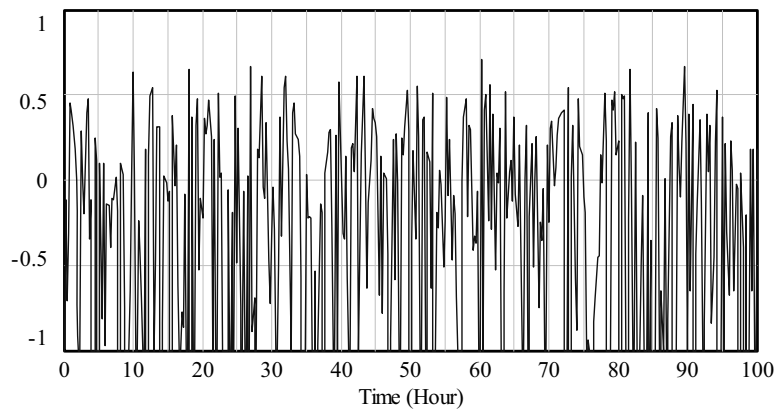Figure 6. Unlocked (Open) questions in the market

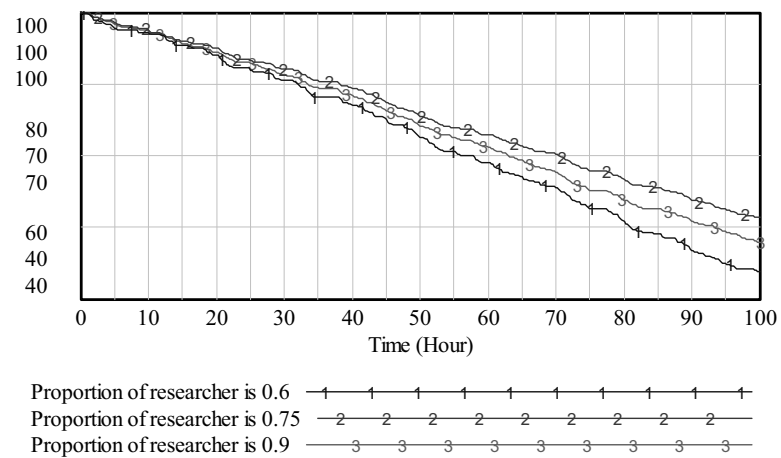Figure 7. Total payoff for researchers in 100 hours period

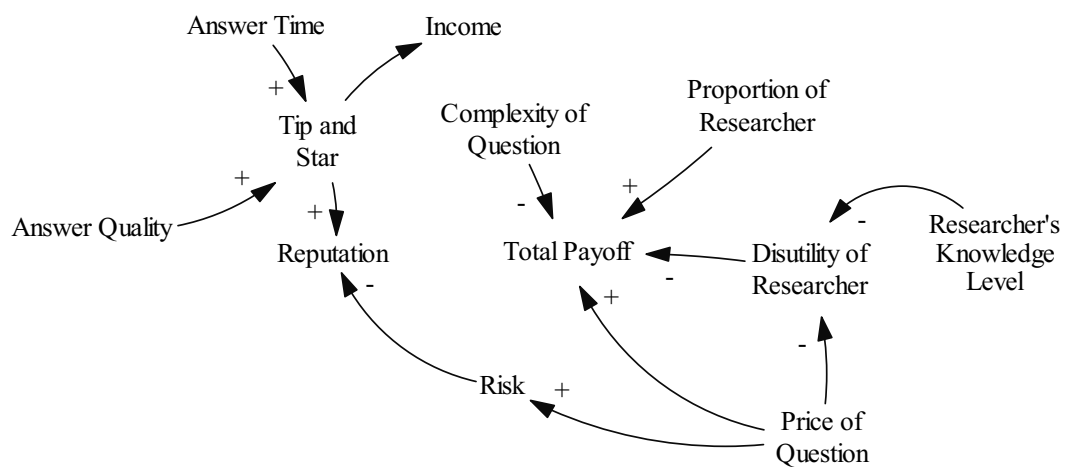Figure 8. Unlocked (Open) questions in the market under a simple scenario

Figure 9. More developed causal loop diagram of researchers' behavior
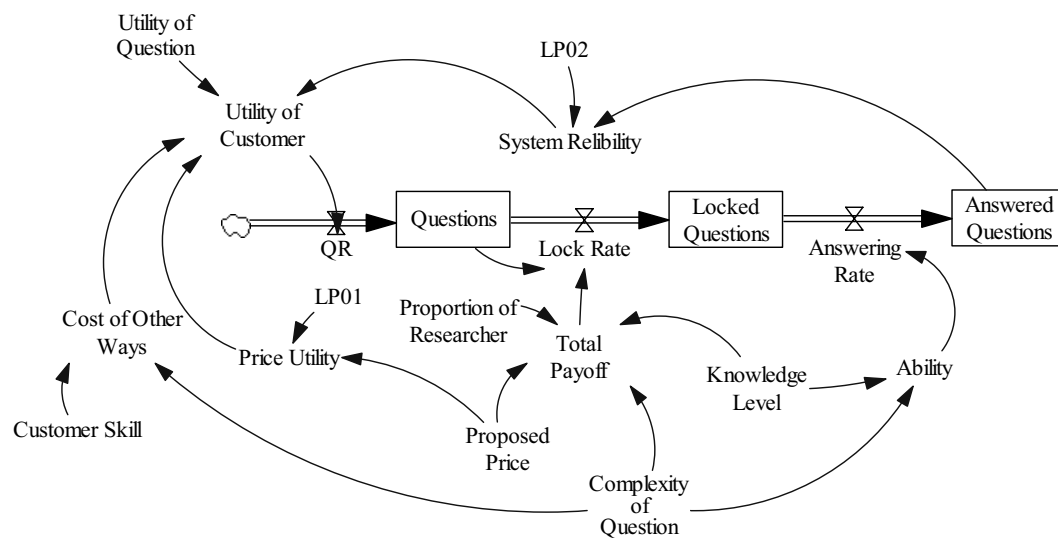

Figure 10. Stock-flow diagram of locking and answering behavior

On Budget Management Strategy for IT Enterprises in Economic Crisis

------ A Case Study of Sohu.com

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Abstract

On the second half of the year 2008, a serious economic crisis caused by US sub-prime mortgage crisis covers the world financial market. This crisis strikes heavily on the financial system and impacts on other industry. The crisis advances higher requirements for governments' macro adjustment and policy supervision. Besides, it requires more for enterprises' financial budget and management. A series problems turn into demanding challenges for enterprises budgeting and controlling under the crisis. By taking the famous Internet enterprise Sohu.com as an example, this paper probes into the financial budget management and controlling strategy of IT enterprises in economic crisis.

Keywords: Financial budget, Economic crisis, IT industry, Safety, Competitiveness

IT industry has high market dependence and capital dependence. Facing economic crisis, how to decrease costs, control expenses, increase profits, and get more cash flows by financial budget management and control is vital for whether an enterprise survives the financial crisis. Some domestic IT enterprises (such as the video-on-demand websites, Youku, and Tudou) are confronted with more difficulties in operation caused by the decline of ads income. The author advances suggestions for budget management in crisis by studying this issue, with the hope of helping IT enterprises surviving the crisis.

1. The world economic crisis' impacts on IT industry

Since the world financial crisis pervades the real economy in September, it has already exerted significant impacts on IT industry. International Data Company (IDC) predicts on Nov. 12th that in 2009 world IT expenditure will rise by 2.6%, lower than previously predicted 5.9%, and the number in America is 0.9%, lower than previously predicted 4.2%. IDC points out that the IT expenditure will realize a rise of 6.6%, achieving a "complete recovery". Even though, IT industry will suffer a 300 billion US dollars loss due to the decrease of relevant expenditure in the future four years. World famous IT enterprises, such as Google and Microsoft, express their optimistic attitudes toward the annual profits in the third and fourth seasonal reports.

The impacts of world economic crisis on IT industry focus on:

(1) The market demand of IT industry decreases, mainly the decrease of software and system update and purchases.

(2) The Internet ads income reduces heavily, which directly threats the main income of Internet enterprises.

(3) The use frequency of IT value-added services by present users will decrease.

The three points are the main impacts of present economic crisis on IT industry. As for Sohu.com, in the second half of the year 2008, return of enterprises declines than that of 2007. It is predicted that the profit increment ratio is 2.5%, lower than the average of the industry. Therein, the return from Internet value-added services decreases by 24.2% and the return from Internet space services decreases by 11%. The return from Internet ads, as the main income, also decreases by 19%. Not only Sohu.com, but lots of IT enterprises in China face a severe condition, such as the well-known video-on-demand websites Youku.com and Tudou.com. The decrease of income from ads leads to lower

profits. Some IT enterprises even can not pay rents for their servers and routes.

To sum up, the financial crisis exerts great impacts on world IT industry, which makes many IT enterprises face serious problems of funds shortage and return decrease.

2. The budget control measures adopted by Sohu.com in dealing with the financial crisis

To deal with the economic crisis, Sohu.com, as an important component of China Internet industry, firstly adopts some effective budget control measures. Xiaoping Zhang, an analyst in Sohu.com, said in a special financial budget meeting in Oct. 2008: "If what in your report is only the expenditure but not the return, you will get less expenditure."

Mr. Zhang said the natural attribute of IT budget was special because the information technology permeated into and served the electric commerce. He also mentioned a popular statistical number: About 80% of IT expenditure is used for commercial operation.

Apparently, if all the contribution of IT is from the 20% investment, we can conclude that the value generated by IT is poor. Mr. Zhang suggested that we should consider the enterprise's financial responsibility in perspective of return, namely to evaluate the value by the consumed resources. In other words, we should consider the commercial return from resources consumed by IT.

This equation can be adjusted from two aspects. The first is to increase the commercial value, namely the numerator. The second is to decrease the denominator with fixed numerator, namely reducing expenditure.

(1) The management in the "denominator" field

The financial branch of Sohu.com advances some tactics to reduce the denominator. The first task is to know the position of budget, compared with equivalent materials. Usually, IT budget is evaluated by the percentage of return. If a branch does not belong the central field of the industry, it is necessary to establish where the expenditure strays away from the normal level and analyze why the expenditure is high. If the high expenditure is determined by the enterprise's special commercial needs or goals, it is necessary to associate the high expenditure with the commercial needs. We can also reduce expenditure from these aspects as follow.

Reduce hasty "start-stop" projects. This project usually operates in several months and then disappears. It is a waste of materials. We can reduce 80% of expenditure in the first year by executing the service software. The main measures mainly include:

Check the software license's purchase mistakes and group discount.

Think about the server and storage's virtual technology.

Investigate and execute the net voice over IP (VoIP).

Set up a standardized operation environment (SOE).

Develop the offshore acquisition operation and take it as a long-term strategy for saving expenses.

(2) Improve the "numerator" aspect

According to Xiaoping Zhang's words, to increase the number of numerator, or the value generated by IT, means to increase the output of IT. In discussing the largest bottleneck of increasing the IT output, the audience puts forward these aspects: applicant software development, CIO, commercial needs, expenditure support, and consumption. Mr. Zhang said it was not always the truth.

In Mr. Zhang's opinion, the greatest barrier is the test, namely the specific testing process. He also mentioned an urgent strategy in Sohu.com that "if the efficiency of testing could be improved by 100%, the output will rise by 400%".

3. The budget management strategy for IT enterprises in economic crisis

In bad economic time, enterprises usually reduce the costs for internal information, namely the IT budget. Among all supportive operations, IT budget accounts for a large part, and even the main part.

Therefore, it is necessary to consider how to reduce enterprises' costs for IT. From experiences, we can consider from these aspects as follow.

3.1 Save costs

(1) Reduce large-sized projects and apply short-term projects

Operations are the base for IT, what also reflect the value of IT. All IT budget serves operations. Therefore, operations usually cover most of IT budget. After all, the software package is expensive. Its implementation is time-consuming. Usually, a middle-sized project will spend one year before its application.

Therefore, to reduce large-sized projects and apply short-term projects can actualize the value of operations as soon as possible at lower costs.

(2) Reduce new projects and add optimizing projects

New projects cost a lot. From the need, the development, to the system maintenance, enterprises must purchase new software and hardware. In contrast, the optimizing projects based on former IT system cost less: less human resources, less costs for IT software and hardware. Besides, the effect will be soon to come.

(3) Choose the right software platform but not the most expensive platform

No matter what an enterprise's type is or what an enterprise's size is, never choose the expensive software and hardware. These expensive software and hardware will cost more in later, such as maintenance, upgrade, and ordered development. IT is changeable, so does enterprises' operations. Therefore, to select software and hardware should take the cost as the first. For example, if Mysql is OK, do not purchase SQL SERVER or Oracle. If tomcat is OK, never use weblogic or websphere. If certain software is for free and it is useful, then use it.

The author has ever known that some large enterprises finally buy specialized and expensive software and hardware due to the temptation of some consulting companies. As a result, these enterprises will cost more and have to follow some IT giants. If you do not upgrade, I will stop the old edition.

3.2 Strengthen internal management and operation optimization and improve the profitability

The IT branch of enterprises is specialized. As the IT system turns into a habit of office work, amounts of corporate management depends on the IT system. Therefore, whether the IT branch's internal process is standard and whether the system is perfect will be known soon.

So, it is necessary to simplified the process and improve employees' qualities and techniques.

To strengthen the internal management means to improve employees' enthusiasm for work and work efficiency. For one project, try to use fewer employees but get same profits. In an economic crisis, it is more important to strengthen the internal management and improve employees' work enthusiasm and work efficiency.

To optimize the operation is also a way for an enterprise improving the competitiveness. To dig out the profitable operation and get rid of the operation that could not offer a cash flow for the enterprise in case of the later occupying capitals but no profits.

3.3 The budget should be adjusted based on present economic situation

In economic crisis, the macro economic situation may change in a short time. An enterprise's financial budget must keep up with the change of macro economic situation, preparing for an instant change. In making up plans, an enterprise should take possible changes of economic conditions into consideration, preparing for the future. Facing the financial crisis, an enterprise must guarantee the cash flow in case of its broken exerting direct impacts on the enterprise's operation. Meanwhile, if an enterprise has foreign business, it should pay attention to the exchange and adjust its prices timely, avoiding potential losses caused by exchange.

3.4 Strengthen guaranteed cash flows in budget management

The cash flow is similar to the blood of an enterprise. The normal operation of an enterprise must depend on the cash flow. An IT enterprise operates a cash flow with its hardware supplier and service users all the time. In a financial crisis, the upstream supplier and the downstream user may fail to pay in time, which may causes problems in the cash flow of an enterprise. Therefore, in economic crisis, an enterprise should especially guarantee the cash flow in budget management, predicting the possibilities of bad debts, making complete preparations for possible bad debts, and avoiding potential problems in the cash flow.

The upstream enterprise should make best use of commercial credit means, such as account payable and bills, decreasing the financial costs and capital costs, and improving the profitability.

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Relevancy and Measurement of Religiosity

in Consumer Behavior Research

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Abstract

Although culture and subcultural norms have been subjected to increased scrutiny in recent years as explanatory constructs for various dimensions of consumer behavior, religion as an element of culture has received only slight attention in the marketing literature. This study seeks to examine the influence of religiosity on one aspect of consumer behavior - shopping orientation. The findings revealed that three shopping orientation factors, namely quality consciousness, impulsive shopping and price consciousness were related to religiosity. It is suggested that religiosity should be included as a possible determinant of shopping orientations in consumer behavior models.

Keywords: Consumer behavior, Religious affiliation, Religiosity

1. Introduction

The construct of culture and subculture have become increasingly central to the consumer behavior literature. Previous studies in the area of culture and formation of consumption (e.g. Schouten & McAlexander, 1995; Shaw & Clarke, 1998; Thompson & Tambyah, 1998) have generally identified cultural values as important factors in determining the consumption behavior of individuals. Notwithstanding the growing body of extant literature focused on this topic, culture has been considered by researchers to be the most difficult construct to investigate because of its pervasive nature (McCort & Malhotra, 1993). Culture has been defined variously as values, norms, rituals, beliefs and symbols shared by members of a group or society. It includes patterns of behaviour, learned responses, basic assumptions, habits and traditional ways of thinking, feeling and reacting (Shweder, 1991). The very complex and abstract nature of culture makes it certainly beyond the bound of possibility for any empirical research to adequately study culture as one unified concept. This has led to the call to "unpackage" culture in order to understand the underlying dimensions of cultural influences and the behavioral consequences of them (McCort & Malhotra, 1993).

There is a considerable body of extant literature focused on culture and its influence on various aspects of consumer behavior. However, among this body of work, there are limited examples of research that incorporate the role of religion as an element of culture with consumer behavior. Instead, researchers have mainly focused on other subcultural factors such as ethnicity, nationality and values as important predictors of consumer behavior.

Religion is an important cultural factor to study because it is one of the most universal and influential social institutions that has significant influence on people's attitudes, values and behaviors at both the individual and societal levels. Whether working directly through taboos and obligation or through its influence on the culture and society, religious values and beliefs are known to affect ritualistically and symbolically human behavior. Religion and its associated practices often plays a pivotal role in influencing many of the important life transitions that people experience (e.g. births, marriages and funeral rites), in values that come to be important to them (e.g. moral values of right and wrong), in shaping public opinion on social issues (e.g. cohabitation, premarital sex, family planning, organ donation, and the like), in what is allowed and forbidden for consumption (e.g. restriction on eating and drinking) and in many other aspects that pertain to everyday life. These norms however vary between different religious faiths and the degree of observance determine to what extent these norms are kept.

Still, observant believers are not the only ones who tend to reconcile their religious beliefs with their behaviors. Religious requirements and regulations often take on an extended meaning beyond observant believers. For instance, dietary laws represent an obligation for observant families and at the same time, a sort of habit or preference for non-observant members of the community. Here, religion refers to, not only a belief binding the spiritual nature of man to a supernatural being, but mainly a sub-system of culture that determine customs and norms of the society. This system is supposed to influence believers' conducts as a sign of reverence or faith and those of agnostics and atheists, as a pillar of cultural environment.

Even though social beings' behaviors and attitudes are directly influenced by at least religion-rooted cultural aspects of their living environments, religion's impact on consumption-related behaviour have been only very modestly studied in the marketing literature. Hirschman (1983) ventured three possible reasons to explain why religion per se has not been adequately examined in the consumer behavior literature. The first reason for the slow development of literature in this area is the possibility that consumer researchers are unaware of the possible links between religion and consumption patterns. The second reason is a perceived prejudice against "religion" within the research community; once being a "taboo" subject and too sensitive to be submitted for investigation (i.e. the potential for inadvertent offence and the legal protection afforded freedom of religion). Finally, she claims that religion is everywhere in our life and therefore may have been overlooked by researchers as an obvious variable for investigation in the field.

Although Hirschman made this assertion some years ago, it is still true today. To date, few studies have investigated religion as a predictor of consumption patterns even though there have been calls for such research in the literature. An analysis conducted by Cutler (1991) that examined the frequency with which papers on religion were published in the academic marketing literature from 1956 to 1989 found that only thirty five articles had a religious focus with nearly 80% of these articles published in the 1980s. Of these, only six were specifically identified as articles within the consumer behavior discipline.

The purpose of this study is to investigate the role of religious factors in explaining differences in consumer behavior. The study aims to contribute to our current stock of understanding of this relationship as well as to provide a basis for further investigation in this promising research area. One aspect of consumer behavior has been selected for empirical investigation - shopping orientation.

2. Theoretical Perspectives

2.1 Defining Religiosity

The search for a generally accepted theory or definition faces enormous difficulties in the case of religion (Clarke & Byrne, 1993). Scholars identify at least three historical designations of the term: (1) a supernatural power to which individuals must respond; (2) a feeling present in the individual who conceives such a power; and (3) the ritual acts carried out in respect of that power (Wulff, 1997). Such designations have defied social scientific consensus and thus "it is hard to make any generalization [concerning religion] that is universally valid" (Peterson, 2001, p. 6). As a result, different theories and definitions of religion are often used in the literature. Among others, religion has been defined as:

"A belief in God accompanied by a commitment to follow principles believed to be set forth by God".

(McDaniel & Burnett, 1990, p. 110)

"A socially shared set of beliefs, ideas and actions that relate to a reality that cannot be verified empirically yet is believed to affect the course of natural and human events".

(Terpstra & David, 1991, p. 73)

"An organised system of beliefs, practices, rituals and symbols designed (a) to facilitate closeness to the sacred or transcendent (God, higher power or ultimate truth/reality), and (b) to foster an understanding of one's relation and responsibility to others in living together in a community".

(Koenig, McCullough & Larson, 2000, p. 18)

"A social arrangement designed to provide a shared, collective way of dealing with the unknown and un-knowable aspects of human life, with the mysteries of life, death and the different dilemmas that arise in the process of making moral decisions".

(Johnson, 2000, p. 259)

"A cultural subsystem that refers to a unified system of beliefs and practices relative to a sacred ultimate reality or deity".

(Arnould, Price & Zikhan, 2004, p. 517-518)

"A system of beliefs about the supernatural and spiritual world, about God, and about how humans, as God's creatures, are supposed to behave on this earth".

(Sheth & Mittal, 2004, p. 65)

A scrutiny of these various definitions reveals the inconsistency underlying the understanding and perception of the concept of religion among researchers. Clarke and Byrne (1993) identified three sources of doubt about the possibility of producing a satisfactory definition of religion. They relate to (1) conflicts and unclarities in the ordinary use of the term; (2) the confused meaning left to the term from its history; and (3) the obvious divergence in scholarly purposes and approaches to the definition of religion. Thus, because religion may be not definable in general terms, "it must be defined for each research setting" (Wilkes, Burnett & Howell, 1986, p. 48).

2.2 Measuring Religiosity

Traditionally religiosity has been conceptualized as a unidimensional construct with church attendance and denomination being the primary measure (Bergan, 2001). Though this unitary measure may be simple at the cost of validity and remains a frequently used measure within the literature (Schwartz & Huismans, 1995), many researchers argued that frequent use does not make such a unidimensional assessment an acceptable research practice. As Bergan (2001) very aptly pointed out, the reliance on religious attendance as a sole measure of religiosity may be insufficient and lead to incorrect conclusions. In fact, the unidimensional view of the nature of religiosity gives rise to one major concern that relates to the difficulty in equating greater attendance of worship in congregation and increased religious commitment. A person may attend prayers in congregation for several reasons, for example, to avoid social isolation, to please their colleagues, or it can be a form of prestigious action to dominate over others. Thus we cannot say that those who are high in religious practice are high in religiosity because this practice could be a routine action more than devotional.

The recognition of the multidimensional nature of religiosity allows for a more thorough understanding of the potential importance of different dimensions or forms of religiosity. Psychometric research conducted in the area of psychology has successfully produced a plethora of scales to measure a wide variety of religious phenomena including attitudes, beliefs and values (Hill & Hood, 1999). Most research has focused upon indices of intrinsic (religion as an end), extrinsic (religion as a means) and quest (religion as a search) dimensions of religiosity. However, there is no consensus among experts as to the number of dimensions that make up the religiosity construct. Religiosity is an intricate concept and a variegated human phenomenon, and seems to cover considerable ground such as behaviors, attitudes, beliefs, feelings and experiences. Religious scholars and sociologists do not agree on whether adequate measures of individual religiosity can be developed and therefore such measures are subjectively devised by researchers to fit their research objectives. Thus, the content and number of religious dimensions vary considerably and may depend on the nature of the research, purpose and context.

Wilkes et al. (1986) contends that the use of a multi-item measurement of religiosity provides a better understanding of its true nature and "may achieve high validity at the cost of sheer impracticality for almost all consumer research" (p. 49). In their study, the dimensionality of religiosity construct was assessed with four items: frequency of church attendance, confidence in religious values, importance of religious values and self-perceived religiousness.

McDaniel and Burnett (1990) initiated an alternative approach of measuring religiosity for consumer research by operationalizing religious commitment in terms of cognitive and behavioral measures of religiosity. The cognitive dimension, defined as the "degree to which an individual holds religious beliefs" (McDaniel & Burnett, 1990, p. 103), was composed of three summated items designed to evaluate the importance of religion: self-ascribed religiousness and two religious-oriented questions interspersed within a list of AIO-related questions. The behavioral dimension was assessed as two separate factors: (1) frequency of church/synagogue attendance and (2) amount of monetary donations given to religious organizations.

Another approach to measure religiosity in consumer research has been the operationalization of the construct either as a means to reach self-centered ends or as an end in itself using Allport and Ross (1967) intrinsic-extrinsic Religious Orientation Scale (ROS). While the ROS has proven to have acceptable reliability and has shown some indication of applicability for marketing in general and consumer research in particular (Delener & Schiffman, 1988; Delener, 1990a, 1990b, 1994; Essoo & Dibb, 2004), one serious shortcoming of the inventory is that they were specifically designed for use with Christian or Judeo-Christian subjects. Thus, direct adaptation of the scale is not always feasible and valid to measure the degree of religiosity of other than Judeo-Christian religions, although the scale has been used in one study involving Muslim and Hindu subjects in Mauritius (Essoo & Dibb, 2004). Genia (1993), as a result of his psychometric evaluation of the ROS, recommends that the item measuring frequency of worship attendance be dropped, because it "presents theoretical as well as methodological problems" (p. 287). In measuring Islamic religiosity, for instance, this item applies only to men because they are obligated to attend worship in congregation at mosque at least once a week on Friday. The intrinsic items on the scale have also been shown to lack internal consistency and to be of questionable value for other than Christian religions (e.g. Genia, 1993).

In studying the relationship between Jewish religious intensity and repeat purchase behavior, LaBarbera and Stern (1990) used two different measures of religious intensity; one for Orthodox Jews and the other for non-Orthodox Jews. Michell and Al-Mossawi (1995), in their experiment to test the mediating effect of religiosity on advertising effectiveness among British Christians and Muslims, also used two different sets of religiosity measures.

Similarly, in their cross-cultural study of consumer behavior in Japan and the U.S., Sood and Nasu (1995) developed two different measures of religiosity. The measurement was based on the responses to nine questions related to belief in the religious practice or activity, the moral consequences and experience dimension or self-rating of one's religiosity.

From the above review, some general conclusions can be drawn: religiosity is a distinct concept which can be measured

from various perspectives. While there is some disagreement in the literature regarding the precise number of dimensions to employ in measuring it, most researchers agree that religiosity is multidimensional in nature. In addition, almost all the empirical studies seeking to specify dimensions of religiosity have been from a Christian perspective and developed with Christian subjects.

2.3 Religious Influences on Consumer Behavior

A series of studies on religious affiliation and consumer behavior that was done by Hirschman in the early 1980's showed that: 1) Jewish consumers tend to be more innovative and less brand and store loyal than non-Jewish consumers (Hirschman, 1981), 2) Catholic consumers are more influenced by price, location, transportation, and mood in making entertainment related choices than are Protestant consumers (Hirschman, 1982), and 3) Jewish, Catholic, and Protestant consumers use different evaluation criteria in making entertainment, residential, transportation, and pet choices (Hirschman, 1983).

Bailey and Sood (1993) examined the effects of religious affiliation on consumer behavior of six religious groups in Washington DC: Buddhism, Hinduism, Islam, Judaism, Catholic and Protestant. The results identified statistically significant differences in the consumer behavior of different religious groups. They found that Muslim consumers were relatively more impetuous shoppers but less likely to be informed or risky shoppers. Hindus were found to be in rational shopper group while Catholics were less likely to be informed shoppers. Buddhists are the only minority religious members in the sample to report consumer behavior similar to the societal norms.

It has been argued that religion is highly personal in nature and therefore its effects on consumer behavior depend on individuals' level of religious commitment or the importance placed on religion in their life. In an empirical study of religiosity and consumer behavior among 602 mostly Protestant consumers, Wilkes et al. (1986) reached a significant conclusion that religiosity influences several aspects of consumer's lifestyle, which eventually may affect choices and/or choice behaviour. When age, income and sex were controlled, the researchers found that people with a higher degree of religious commitment tend to be satisfied with their lives, have a more traditional sex-role orientation and are more likely to be opinion leaders.

McDaniel and Burnett (1990) investigated the influence of religiosity on the importance of various retail department store attributes held by consumers. The results show that one aspect of religiosity, religious commitment, particularly measured by cognitive religiosity and one aspect of behavioral religiosity are significant in predicting the importance individuals place on certain retail evaluative criteria. Consumers with a high degree of cognitive religious commitment viewed sales personnel friendliness, shopping efficiency, and product quality as being of greater importance in selecting a retail store than did those low in cognitive religious commitment. Religious contribution, a behavioral component of religious commitment, was positively and significantly associated with sales personnel friendliness/assistance and credit availability.

Sood and Nasu (1995) conducted a cross-cultural comparison of the effects of religiosity on general purchasing behavior for a sample of Japanese and American consumers. They suggested that there is no difference in consumer shopping behavior between devout and casually religious Japanese individuals and this could be attributed this to the fact that religion is not an important element in overall Japanese culture. On the other hand, devout Protestants in the U.S.A. were found to be more economic, buying product on sale, shopping in stores with lower prices, being open to buying foreign-made goods, believing that there was little relation between price and quality, tending to not believe advertising claims while preferring subtle and informative advertisements.

Essoo and Dibb (2004) conducted a similar study in Mauritius involving Hindu, Muslim and Catholic consumers. The results confirmed that consumers having different level of religiosity differ notably in their shopping behavior. In particular, devout Hindus were found to differ from their casually religious counterparts in four shopper types: the demanding, practical, thoughtful and innovative shopper. In the case of Muslim consumers, their findings suggest that there is no difference in consumer shopping behaviour between devout and casually religious Muslim consumers, except for the trendy shopper type. Devout Catholics were found to differ from their casually religious counterparts in four types of shopper: the demanding, practical, trendy and innovative.

The empirical findings reviewed above provide some intriguing evidence of a causal link between religion and consumer behavior, both in terms of cognitive and conative behavioral aspects. It is important to note, however, that most prior studies on this topic have been conducted among American population who are predominantly Jews, Catholics or Protestants. As such, little can be said about the robustness of previous findings in other religious contexts and cultural settings.

3. Method

3.1 Measures

Two dimensions of religiosity have been identified from the literature review: religious affiliation and religious

commitment. Religious affiliation has typically been measured relative to religious denominational membership or religious identification of the individual. Religious commitment has been measured both cognitively (feeling or affect) and behaviorally. Both dimensions are appropriate for consumer behavior research given the fact that religious affiliation is only useful as a predictor variable to assess the existence of differences between two or more religious groups but not within a specific religious group. Further, although classification based on religious affiliation enjoys the advantage of objectivity, it suffers a limitation as one may or may not identify oneself strongly with one's religiosity.

Religious affiliation was measured by asking respondents about the religions with which they identified (Muslim, Buddhist, Hindu, Christian or Other). This approach is regarded as "emic" in nature, that is, it allowed the respondent to label themselves and to ensure that those who were "born into" a particular religious tradition but no longer felt tied to it were not judgmentally labelled by the researcher (Hirschman, 1982). This method of measuring religious affiliation is the approach deemed most appropriate by cross-cultural behavioral researchers, and especially those in cultural anthropology and sub-cultural psychology.

Religiosity was measured using the Religious Commitment Inventory (RCI-10) developed by Worthington et al. (2003). The RCI-10 measures motivational and behavioural commitment to a religious value system, irrespective of the content of beliefs in that faith system and has been validated across different samples. It skillfully avoids sectarian language often utilizing terms such as "my faith" and "my religious group" and is appropriate for use across most faiths. The RCI-10 does not delve directly into the potentially sensitive and contentious theological religious realm, thus eliminating any possibility of offending participants or provoking their sensitivity. The scale consists of ten 5-point Likert-type statements ranging from "Strongly Disagree" (1) to "Strongly Agree" (5) with six statements expressing intrapersonal religiosity (cognitive) and four expressing interpersonal religiosity (behavioral).

The cognitive dimension focuses on the individual's belief or personal religious experience while the behavioral dimension concerns the level activity in organized religious activities. These two dimensions of religiosity appear theoretically sound and empirically substantiated and investigations into religiosity effects must consider both factors. Individuals may perceive themselves to be highly religious (cognitive component) but for whatever reason, are not behaviourally expressive in their religious beliefs, e.g. they do not attend church, tithe and so forth (behavioral component) or they may be motivated to give generously of their time and money to organized religion by appeals to their need for prestige and social appearances while not ascribing strongly to religious precepts.

Twenty-six items for shopping orientation were included in the questionnaire, obtained from Shamdasani, Hean and Lee (2001) which was validated by a Singaporean sample. This was chosen over other inventories because of its use of a Singaporean sample and which is thus thought of as valid to represent the general characteristics of consumers in an Asian environment. Both Malaysian and Singaporean consumers share many similarities in terms of socio-demographic composition, making this inventory equally applicable for the present study. A 5-point Likert scale was used to measure the shopping orientation of respondents, ranging from "Strongly Disagree" (1) to "Strongly Agree" (5). The shopping orientation scale had a mix of both positive and negative statements.

Seven questions were developed to ascertain respondents' demographic information. These include gender, age, marital status, education attainment, work status, ethnic identity, religious affiliation and household's monthly income.

3.2 Data Collection and Sample Characteristics

The research data was collected by means of a survey. Using area sampling procedure, three hundred respondents across five residential areas in Kuala Lumpur were randomly sampled for this study. Of these, two hundred and twenty-six questionnaires were deemed usable for data analysis.

The sample consisted of slightly more female respondents (55.3%). The largest proportion of the respondents was Muslim (45.6% of the total sample), followed by Buddhist (25.2%), Hindus (15%) and Christians (14.2%). The sample was divided with respect to education: 43.8% had diplomas, 43.8% were first degree holders while postgraduate degree holders 10.6%. Respondents who possessed secondary education represented 23.9% of the sample. In terms of income, the greater number of respondents (48.6%) fell into the middle-income category, indicated a household income of RM1500 to RM3500 per month. Overall, the sample appeared to be younger, more educated and includes more middle-income earners.

4. Results

4.1 Investigation of the Measures

Data were analyzed using SPSS for Windows (version 11.5). As a preliminary step, religiosity and shopping orientation items were factor analysed to reduce the variables to a manageable number of components. Factoring ceased when all eigenvalues of greater than one were obtained and when a set of factors explaining a large percentage of the total variance was achieved. An accepted method of interpretation of factor loadings is to regard as significant any variable with a loading of 0.4 or greater as associated with the appropriate factor (Hair, Anderson, Tatham & Black, 1998).

Reliability analysis was then carried out to examine the internal consistency of the factors obtained where Cronbach's alpha coefficient at 0.5 or higher was considered acceptable (Kerlinger & Lee, 2000).

The factor analysis of the 10 religiosity items extracted two factors which had eigenvalue greater than one. The first factor was labeled as "intrapersonal religiosity" and the other one was labeled as "interpersonal religiosity". These factors produced alpha coefficients of 0.85 and 0.68 respectively and their factor loadings ranged from 0.553 to 0.818, indicating high internal consistencies and reliability. Similar procedure was also applied to the 26 shopping orientation items. The principal component analysis and the ensuing varimax rotation produced six factors that yielded eigenvalue greater than one. These six factors were named as (1) "brand consciousness", (2) "shopping enjoyment", (3) "fashion consciousness", (4) "quality consciousness", (5) "impulsive shopping" and (6) "price consciousness". Loadings for these factors varied in a range between 0.566 and 0.835. Cronbach's alpha coefficients ranged from 0.65 to 0.83, indicating acceptable internal consistency and reliability for these six factors. Table 1 summarizes the results.

4.2 Effects of Religious Affiliation

The results of ANOVA analyses (Table 2) indicated that there were no significant differences in shopping orientations among consumers affiliated with different religions.

4.3 Effects of Intrapersonal Religiosity

Statistically significant differences among groups existed in three of the six shopping orientations (Table 2). Those three orientations included quality consciousness (F = 11.898, p < 0.001), impulsive shopping (F = 12.468, p < 0.001) and price consciousness (F = 11.599, p < 0.001). The results indicated no significant differences among groups for brand consciousness, shopping enjoyment and fashion consciousness orientations.

Post-hoc pairwise comparisons were conducted on significant findings to determine in detail these differences. For quality consciousness, the significant contrast existed between low and high (p = 0.000) and between medium and high (p = 0.002) groups. Subjects in the high religiosity group appeared to exhibit a substantially higher quality consciousness than the low and medium groups (Ms = 4.01 for high, 3.75 for medium and 3.53 for low).

In relation to impulsive shopping, significant differences were found between low and high (p = 0.000) and between medium and high (p = 0.000) groups. Subjects with a high level of intrapersonal religiosity appeared to exhibit less shopping impulsiveness than the other two groups (Ms = 2.68 for high, 3.22 for medium and 3.29 for low). However no significant contrast was observed between low and medium groups.

For price consciousness orientation, significant differences were found between low and medium (p = 0.022) and between low and high (p = 0.000) groups. Subjects in low religiosity group appeared to exhibit a lower price consciousness than their counterparts in medium and high religiosity groups (Ms = 3.34 for low, 3.67 for medium and 3.9 for high). No significant difference was observed between medium and high groups.

4.4 Effects of Interpersonal Religiosity

As displayed in Table 2, significant differences among groups were found in five of the shopping orientations. Those with a significant difference are the brand consciousness (F = 3.333, p < 0.05), fashion consciousness (F = 3.193, p < 0.05), quality consciousness (F = 11.906, p < 0.001), impulsive shopping (F = 8.555, p < 0.001) and price consciousness (F = 16.11, p < 0.001). The F-ratio for the price consciousness variable was highly significant, indicating strong differences in the level of price consciousness among the three religious groups. No differences among groups are indicated for the shopping enjoyment orientation.

Post-hoc pairwise comparisons were conducted on significant findings in order to assess mean differences between groups. For brand consciousness, significance differences were observed between low and medium groups (p = 0.038). Subjects in the medium group appeared to exhibit higher level of brand consciousness than the low group (Ms = 3.2 for medium and 2.81 for low). The high group was intermediate in this regard (M = 2.9) but not significantly different from either low or high groups.

With respect to fashion consciousness orientation, a significant difference was found between low and medium groups (p = 0.039). The cell means indicate that subjects in the medium group exhibited higher level of fashion consciousness than those in the low group (Ms = 3.02 for medium and 2.66 for low). The high group was intermediate in this regard (M = 2.76) and not significantly different from either low or high groups.

In relation to quality consciousness, a significant difference was found between low and medium (p = 0.006) and between low and high groups (p = 0.000). By comparison, subjects in the high and medium groups appeared to exhibit a higher level of quality consciousness than subjects in the low group (Ms = 4.00 for high, 3.93 for medium and 3.53 for low).

As with impulsive shopping, significance differences were indicated between low and high (p = 0.01) and between medium and high (p = 0.000) groups. An examination of the mean scores show that subjects in the high group appeared

to exhibit lower level of shopping impulsiveness (M = 2.77) than the other two groups (Ms = 3.34 for medium and 3.16 for low).

Finally, for price consciousness orientation, significant differences were found between low and medium (p = 0.028) and between low and high (p = 0.000) groups. The cell means indicate that subjects in the high group exhibited higher level of price consciousness (M = 3.94) than their counterparts in the low group (M = 3.34). Medium group was intermediate in this regard (M = 3.66) but not significantly different from the high group.

5. Discussion

Findings of this study suggest that significant differences exist in shopping orientation among consumers with different levels of religiosity. Both dimensions of religiosity (intrapersonal and interpersonal) may be significant in predicting certain aspects of shopping orientation. More specifically, three shopping orientation factors, namely price conscious, quality conscious and impulsive shopping, were found in the present study to be consistently related to religiosity. It appears that highly religious individuals, as defined by both intrapersonal and interpersonal measures of religiosity, are most likely to be concerned with price (i.e. prone to look for deals), look for quality in product when they shop and less likely to make impulsive purchase decision. However, no significant differences were found across the groups with regards to shopping orientation, indicating the lack of explanatory power of religious affiliation in explaining variation in this aspect of consumer behavior.

The present study has provided some new information that adds to our current limited stock of knowledge concerning the influence of religion on consumer behavior. Evidently, religion does have an effect on reported behavior with the degree of religiosity was found to be more important than belonging to any particular religious faiths. This is among major contribution of this study as until now the existing literature on this subject, while supporting for the inclusion of religious variable as a reliable and valid predictor in consumer research, provide little consensus agreement on which measure (whether categorical measure of religious denomination or multidimensional measure of religiosity) is the most efficient in explaining variation in aspects of consumer behaviour. It appears that the differences between consumer behavior in general were much more overt for religiosity than merely for religious affiliation. This implies that religiosity may serve as a potentially powerful predictor and determinant of consumer behavior.

Another theoretical contribution of this study is the identification of religiosity dimensions. While there is no consensus in the literature regarding the exact number of religiosity dimensions, most researchers agree that religiosity is a multi-dimensional construct that necessitates its components to be studied individually. Thus, in keeping with the injunction to measure religiosity in a multi-dimensional manner (Wilkes et al. 1986), the study utilized a multi-item scale covering cognitive and behavioral aspects of religiosity in order to obtain a clear picture of how religious the subjects really are. As the result of factor analysis have confirmed, religiosity could be represented by two religious dimensions namely intrapersonal religiosity and interpersonal religiosity, with the former mainly represents the cognitive dimension while the latter mainly represents the behavioral dimension of religious commitment. The dimensionality of religiosity found in this study lends support for Worthington et al.'s (2003) conceptualization. These two religious dimensions are particularly important in consumer research since many explanations of consumer decision-making process revolve around the concept of cognitive and behavior (Solomon, 2002; Arnould et al. 2004).

While no researcher thus far has adapted the RCI-10 inventory as measurement device for religiosity construct, the use of this inventory in the current research has proved to be a reliable measure since a high alpha coefficient of 0.85 was obtained for the scale. The reliability tests performed on the two components of the scale, intrapersonal religiosity and interpersonal religiosity, also showed a high degree of internal consistency with alpha coefficients of 0.85 and 0.68 respectively. The high alpha values for both scales confirmed prior reliability tests of the scale (Worthington et al. 2003). Although a higher alpha level would be preferred for interpersonal religiosity, the scale is generally acceptable for an initial research effort. This scale was used in the current study to measure the degree of religiosity of four different religious groups which had not previously been measured using this scale. Experience from this study would indicate that those who seeking a short religiosity scale for use in survey research involving non-Judeo Christian respondents, particularly in the non-Western culture, should probably consider the RCI-10 inventory. Moreover, apart from the fact that this scale is neutral (i.e. free from bias towards specific tenet of any religious faiths), from the methodological perspective, a shorter version of the religiosity scale but at the same time maintaining excellent psychometric support would save time in research protocol by cutting the number of items nearly in half (e.g. as compared to 20-item Religious Orientation Scale developed by Allport and Ross). More importantly, a shorter version of religiosity scale may be preferable and even practical because it is sometimes difficult in getting the participation of religious respondents due to the sensitive nature of the topic being researched.

Finally, the findings reported in this paper provide empirical evidence concerning religion's influence on consumer behavior in a non-Western culture. A review of relevant literature showed that the majority of past studies addressing the linkage between these two constructs have been typically conducted with Western Judeo-Christian cultures where Jews, Protestants and Catholics are predominant in its society; other countries with different socio-cultural milieus are

underrepresented in research investigating this issue. As such, these studies provide limited supports on the generalizability of the research findings. This study contributes to the current literature as the first piece of empirical endeavor to probe the relationship between religion and consumer behavior in a totally different cultural framework - Malaysia. There has been no report to date of empirical study that explored the influence of religion on consumer behavior in the context of Malaysian culture. The present research may lead international consumer researchers to a better understanding of the relevancy of religiosity on consumer behavior across different cultural settings, especially in those where the four world's major religions namely Islam, Buddhism, Hinduism and Christianity, reflect the multi-character of the population.

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Table 1. Principal component factor analysis

Factor	No. of item	Eigenvalue	Percentage of variance	Cronbach Alpha
Religiosity				
Intrapersonal religiosity	6	3.25	32.5	0.85
Interpersonal religiosity	4	2.32	23.18	0.68
Shopping orientation				
Brand consciousness	4	2.87	13.67	0.83
Shopping enjoyment	4	2.56	12.17	0.78
Fashion consciousness	4	2.46	11.73	0.8
Quality consciousness	3	2.1	10.0	0.73
Impulsive shopping	3	1.85	8.82	0.66
Price consciousness	3	1.78	8.45	0.65

Note: Factors were extracted by using principal component method with a varimax rotation

Table 2. ANOVA results

Variable	Religious affiliation		Intrapersonal religiosity		Interpersonal religiosity	
	F	Sig.	F	Sig.	F	Sig.
Brand consciousness	1.157	0.327	0.393	0.676	3.333	0.037*
Shopping enjoyment	1.462	0.226	1.600	0.204	1.087	0.339
Fashion consciousness	0.817	0.486	0.085	0.919	3.193	0.043*
Quality consciousness	1.002	0.393	11.898	0.000**	11.906	0.000**
Impulsive shopping	0.951	0.417	12.468	0.000**	8.555	0.000**
Price consciousness	1.350	0.259	11.599	0.000**	16.11	0.000**

*p<0.05; **p<0.01

Table 3. Mean values

Variable	Religious affiliation				Intrapersonal religiosity			Interpersonal religiosity		
	M	H	B	C	L	M	H	L	M	H
Brand consciousness	3.00	2.89	3.04	2.71	2.88	3.00	2.92	2.81	3.20	2.90
Shopping enjoyment	3.39	3.17	3.11	3.23	3.18	3.21	3.39	3.17	3.37	3.30
Fashion consciousness	2.76	2.75	2.99	2.70	2.76	2.78	2.81	2.66	3.02	2.76
Quality consciousness	3.90	3.71	3.75	3.81	3.55	3.75	4.08	3.53	3.93	4.00
Impulsive shopping	2.95	3.10	3.22	3.06	3.29	3.22	3.68	3.16	3.34	2.77
Price consciousness	3.74	3.64	3.45	3.65	3.34	3.67	3.90	3.34	3.66	3.94

M = Muslim; H = Hindu; B = Buddhist; C = Christian

L = Low; M = Medium; H = High

Table 4. Summary of results

Dependent variable	Independent variable		
	Religious affiliation	Intrapersonal religiosity	Interpersonal religiosity
Brand consciousness	n.s.	n.s.	M>L
Shopping enjoyment	n.s.	n.s.	n.s.
Fashion consciousness	n.s.	n.s.	M>L
Quality consciousness	n.s.	H>L,M	H,M>L
Impulsive shopping	n.s.	H<L,M	H<L,M
Price consciousness	n.s.	L<M,H	L<M,H

L = Low; M = Medium; H = High

Customer Value Analysis from a Customer's Perspective:

Case of Turkish Airlines Domestic Passengers

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Abstract

The value concept seems to be one of the most recent and most popular trends. In recent years, customer value has become a major focus among strategy researchers and practitioners as an essential element of a firm's competitive strategy. (Ravald and Grönroos, 1996) Customer value and customer benefit are key concepts in marketing as well as operations management the emphasis in airline management seems to lie on cost management and traditional quality management customer value concepts in passenger air transport, becomes clear that there have been changing focuses not necessarily always driven by customer needs but more by technical and market influences. (Biegera, Wittmerb) Therefore, this article focuses on customer value from a customer's perspective and study focuses on determination of the domestic passenger's perceived value of Turkish Airlines' services, like for example price, convenience of flights, on time performance etc. This concept is a new strategic orientation in the industry.

Keywords: Airlines, Customer Value, Customer Value Analysis, Turkish Airlines (THY)

1. Introduction

Understanding what buyers value within a given offering, creating value for them, and then managing it over time have long been recognized as essential elements of every market oriented firm's core business strategy (Drucker, 1985, Porter, 1998; Desarbo, Jedidi and Sinha, 2001).

Companies are searching for new and better ways to create value and differentiate their market offerings to attract and keep customers and make a profit (Bendapudi, Leone 2003). Many firms have been interested in Customer Value Analysis which involves a structural analysis of the antecedent factors of perceived value (i.e., perceived quality and perceived price) to assess their relative importance in the perceptions of their buyers.   Understanding what buyers value within a given offering, creating value for them, and then managing it over time have long been recognized as essential elements of every market-oriented firm's core business strategy (Porter, 1998).

The value concept exists only to a limited extent in the marketing literature. After having studied the theories of several consumer behaviour researchers, we found that "value" is constantly used in a context meaning values of consumers (Engel and Blackwell, 1982; Engel *et al.*, 1990; Schiffman and Kanuk, 1978; Zaltman, Wallendorf, 1983). Peter and Olson (1993), however, discuss another meaning of value – the value or utility the consumers receive when purchasing a product. In services marketing, the value concept appears quite frequently, but any clear definition cannot be found until we turn to the literature on pricing. Monroe (1991) defines customer-perceived value as the ratio between perceived benefits and perceived sacrifice (Monroe, 1991, Ravald, Grönroos, 1996).

In the academic literature, value has been conceptualized in various ways. In most places, customer value has been defined as a tradeoff between (customer-perceived) quality and (customer-perceived) price. Perceived quality, in turn, has been conceptualized as buyers' "judgment about a product's overall excellence or superiority" (Zeithaml, 1988), and perceived price is defined as the consumers' subjective perception of the objective price of the product (Jacoby and Olson, 1977). Similarly, Porter (1985) likens buyer value as a tradeoff of buyer-perceived performance and buyer cost. A comparable view is taken in industry where perceived value has been variously defined in much of the popular press as "quality at the right price" or as "affordable quality" (Desarbo, Jedidi and Sinha, 2001).

2. Analysis and Measurement of Delivering Value to Customers

Customer value has something to do with the benefit which a product or service creates in customer in return for the cost that customer bear in order to get that service. The concept of value is often compared to quality and price. Quality is a

feature that increases or decreases the value of a product or a service. This can therefore be stated as "quality = customer satisfaction." Similarly, price factor is the money demanded for a product or a service but it does not necessarily indicate the value of that product or service. The value of a product or service is the proportion of the benefit it brings to customer to the price or cost. This expression can be best explained with the following formula (Özevren, 2000).

$V = (Q+A) \times I/P$

V: Customer value

Q: Quality of product or service expected by customers

A: Additional features not expected by customers

I: Importance attached to the features by customers

P: Price

Importance Attached by Customers to the Features of Product or Service (I): While calculating the value, customers are asked to identify how important the product or the service they buy and to score it based on a certain grading. Once how customers perceive the product or the service is determined, the multiplication of these values $(Q+A)*I$ shows the benefit the product or the service brings to customers. The value can easily be calculated with the formula stated given above by means of benefit matrix. In benefit matrix, the importance which customers attach to the services offered is multiplied by the level of customers' satisfaction and the total benefit concerning the product or the service is determined. Value, on the other hand, is found by dividing the total benefit by sale price or costs.

As a result of the developments and improvements to be performed in the services offered or in the criteria, the calculated value can be used in comparing the results of the researches to be conducted under the same conditions. However, the calculated value will display variations for each price or cost taken as the base according to the formula.

Expectation matrix is established so that the data in benefit matrix can be evaluated. Expectation matrix has two dimensions: importance level of the service factors and satisfaction level of customers. Expectation matrices are drawn based on the threshold values of satisfaction level and importance degree. In other words, the evaluation is carried out by taking the mean value of satisfaction and the mean degree of importance. The means for both satisfaction level and importance degree are determined through multiplying the number of people checking the relevant point by the points and then through dividing the gained value by the number of people providing answers (Özevren, 2000).

Both of the axes above indicate the levels of importance and satisfaction of customers. There are four areas in this matrix. These areas can be as the following: (Martilla, James 1977, Ainin, Hisham, 2008).

(Insert Table 1 Here)

Quadrant I (Concentrate here): In this area, although the importance attached to product or services by customers is high or very high, the level of customer satisfaction is low.

Quadrant II (Keep up the good work): In this area, products and services are important for customers and satisfaction level of customers about these features is high.

Quadrant III (Possible overkill): Although the qualities of the products and services in this area are low for customers, the level of customer satisfaction about these qualities is high. Here, customers are offered opportunities far beyond their expectation.

Quadrant IV (Low-priority area): In this area, just the presence of standard features is considered sufficient. For each feature of products or services, a point is marked according to importance and satisfaction levels on expectation matrix. In this case, many points are gained for all of the features and then high-priority areas to operate are determined.

3. Research Methodology

Objective of the Study: This study focuses on determination of the domestic passenger's perceived value of Turkish Airlines' services.

Limitations of the Research: The research is limited by the questionnaire answered between   the 1-7 of January, 2007 by 190 passengers. Data were collected from passengers departing from Istanbul Ataturk Airport.

Research Method: Face-to-face interview is used for the research.

Research Medium: The research medium consists of 190 passengers. For sampling purposes, 190 was randomly selected from the passengers between 1-7 of January and included in the questionnaire analysis.

Collection of the Research Data: A pilot work has been done with 13 passengers to learn about how good the questions in the questionnaire form serve for the objective of the research. According to answers to those questions, some modifications have been done in the questions. 190 usable questionnaires were gained in the research and Microsoft Office Excel and SPSS 13, 0 (Statistics Pack for Social Sciences) were used in the analysis.

Reliability Analysis of the Research: It is possible to say that the research is reliable as a whole, according to the coefficient of reliability α = 0,884

4. Research findings

The descriptive information related to the properties of the subjects participating in the research can be seen in the tables below.

 (Insert Table 2 Here)

59 % of 100 subjects are male and 41 % of them are female passengers.   When the distribution of the subjects according to their age range is analyzed it can be seen that 15,2% of them are aged between 15-25, 54,8 % of them are aged between 26-35, 22,7 % of them are aged between 36-45, 5,8% of them are aged between 46-55 and %1,5 of them are aged 56 or more than it. Consequently it is seen that passenger intensify between "26-35".

When the distribution of the members related to their education background is examined, it can be seen that 57,4 % of the members are graduates, 18,9% of them are master's degree graduates and 5.8 % of them are doctor's degree graduates. When the proportion of the members who are graduates and postgraduates is analyzed in terms of the general sum a high proportion has been occurred as 82, 1 %.

When the monthly incomes of the members are examined, it has been seen that 36,9 % of them have monthly income as 1000-1999, 36,3% of them have monthly income as 2000-2999, 10 % of them have monthly income as 3000-3999, 7,9 % of them have monthly income as 4000- more than it.

Passengers participating in the survey were asked about the general range of the tickets they buy. The responses received revealed that the prices of the tickets bought by the passengers were in the range of 81 TL to 120 TL (57, 4%). This distribution was followed by ticket prices in a range of 121-160 TL by 19% and 41-80 TL by 11%.

(Insert Table 3 Here)

Expectation matrix was established by means of the mean scores computed with benefit matrix for satisfaction levels and importance degrees within each service and criterion, determined by multiplying the number of people checking the relevant point by the points and then through dividing the gained value by the number of people providing answers.

(Insert Table 4 Here)

In the area of "Concentrate here" (Quadrant I), while there is not any service, it should be taken into evaluation because the criterion of convenience of the schedule turned out to be higher than the threshold value.

In the area of "Keep up the good work" (Quadrant II) are there the services and criteria related to the image of airline company, on time performance, attitude and behavior of the staff, security, baggage services, flight safety and cabin cleanliness.

In the area of "Possible overkill" (Quadrant III) are there are the services and criteria related to aircraft comfort and design and availability of online services.

In "Low-priority area" (Quadrant IV) are there the services and criteria related to convenience of schedule, convenience of flight line, ticket fares, aircraft type, variety-speed-quality of catering services, paid catering services and meeting special requests in check-in and boarding procedures.

(Insert Figure 1 Here)

As can be seen in Figure 1, the services and criteria seen most important by customers are the image of airline, on time performance, attitude and behavior of the staff, safety, baggage services, flight safety and cabin cleanliness and convenience of the schedule. THY (Turkish Airlines) has reached the desired level in the services and criteria about the brand image of airline company, on time performance, attitude and behavior of the staff, safety, baggage services, flight safety and cabin cleanliness. These features, as can be seen in the figure, are in Quadrant II, in the area of "keep up the good work." The fact that THY has been a flag carrier airline company and always delivers improved services to its customers leads to its strengthened brand image. There should be more studies on customer relations of THY so that its brand image can be improved more. Moreover, questionnaires and similar activities measuring customer satisfaction should be conducted regularly and continuously in addition to the efficient operation of suggestion and complaints units for more accurate determination of customers' demands and expectations.

THY pays attention to on time performance and baggage services and criteria. However, pleased with the present situation, the company shouldn't rest on its laurels in terms of control mechanism. To this end, they should keep up preventive measures against any possible factor, rather than weather conditions, which may cause delays. Likewise, the same determined policy should be followed in the services and criteria for flight safety and cabin cleanliness. Training units should improve and revise their activities in order for the staff to display their attitude and behavior to their customers in a more positive way.

Although the criterion for the convenience of the schedule turned out to be in low-priority area, it can actually be considered in the Quadrant I as it appears just on the threshold. In other words, while the criterion for the convenience of the schedule is the least effective factor in customers' choice, it couldn't be made to reach the satisfactory level for customers. Though the criterion for the convenience of the schedule does not seem to be regarded as an effective factor for customers' choice of the airline company, relevant actions for the mentioned criterion should be enhanced and performed continuously in order not to cause any fall in the satisfaction level of THY customers. In addition to feasibility cost analysis of the schedule, new methods and arrangements which can determine customers' opinions and suggestions will surely deliver more satisfaction to customers. Obviously, even if customers are satisfied with the mentioned services and criteria, THY should improve its services regularly and continuously and get involved in preventive actions against possible mistakes.

Customers' level of satisfaction was high about the services and criteria in Quadrant III related to aircraft comfort and design and availability of online services. These services and criteria are in the area of "possible overkill." While the activities for the services and criteria about aircraft comfort and design and availability of online services should be conducted at the same level, there shouldn't be any actions causing cost increase.

The services and criteria in Quadrant IV related to convenience of schedule, convenience of flight line, ticket fares, aircraft type, variety-speed-quality of catering services, paid catering services and meeting special requests in check-in and boarding procedures are regarded as the least influential factors in terms of affecting customers' choice of the airline company. The degree of the importance attached by the customers to these services and criteria turned out to be low, too.

As a result of the measurement of customer value about the services and criteria offered by THY to its customers, it comes out that THY can create a certain level of value for its customers. By means of this application, the value calculated for the services and criteria offered by THY to its customers was measured as 1, 4860. In order for this value to be evaluated, scale value needs to be computed first of all. When the evaluation was performed out of four full points separately for importance degree and satisfaction level, a total of sixteen services and criteria were questioned and the average ticket fare was accepted to be 108,21 TL computed by means of the data in Table 2, the maximum value of the scale was calculated as (4x4x16)/108,21=2,36.

1, 4860, the calculated value for the application performed, is between 0-2, 36 values and at a point of 62, 81%. Accordingly, taking THY's average domestic line air fare into consideration, the research conducted show that THY has created customer value at a level of 62, 81%.

5. Conclusions

It could be suggested in light of the data from this research that one of the key marketing strategies of airline companies operating in domestic lines should be comprised of activities aimed at creating value for their customers. On the other hand, they should accurately determine the features and structure of the market and customers they deliver service to so that they can determine the methods and strategies suitable for their operational structures.

Airline companies have to ensure that ticket fares do not display much variation over the current rates by carefully examining the factors affecting cost. In addition to ticket fares, other services and criteria also play a role in delivering value to customers. It is also apparent that other service features for the easiest and most convenient access to airline service such as making fast reservation and meeting special requests in check-in and boarding procedures are effective, too. The time spent by passengers for baggage checking should be eliminated by means of using electronic tickets in baggage services and the control mechanism for the staff in charge of baggage services should be managed more efficiently.

Even if airline companies offering services in domestic lines seem to have achieved the desired level according the measurement results for the value they deliver to their customers, they have to continue their development and improvement activities in their services regularly so that they can maximize their customers' satisfaction level.

It is considered that airline companies can perform the same measurement and evaluation for the new services which they will add to the current ones and carry out tasks aimed at increasing customer value and that airline companies providing the same kind of service could make comparisons between their services for creating customer value.

It is also thought that this study, conducted in domestic lines, can also be used for the customer value measurement of airline companies providing service in international flights and customer value measurement practices can be applied into other sectors as well as airline sector.

Final words: Airline managers of the future should be aware of customer value as an increasingly important factor for driving continued growth. It is important that a focus is put on customers' real needs and expectations instead of stated preferences.

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Table 1.   Expectation Matrix

Importance Degree	High	Quadrant I (Concentrate here)	Quadrant II (Keep up the good work)
	Low	Quadrant IV. (Low-priority areas)	Quadrant III. (Possible overkill)
		Low	High

Satisfaction Level

Table 2. Demographic

Nationality	Frequency	Percent
Turkish	190	100
Other	0	0
Gender	Frequency	Percent
Man	113	59
Women	77	41
Age	Frequency	Percent
Between15–25	29	15,2
Between 26–35	104	54,8
Between 36–45	43	22,7
Between 46–55	11	5,8
56 and more	3	1.5
Education	Frequency	Percent
primary school	2	1
high school	32	16.9
University	109	57,4
Master	36	18.9
Doctorate	11	5.8
Monthly income(TL)	Frequency	Percent
0- 999	17	8.9
1000–1999	70	36.9
2000- 2999	69	36.3
3000- 3999	19	10
4000 and more	15	7.9
Total	**190**	**100,0**

Table 3. Range of Ticket Prices for Customers

Price (TL)	Frequency	Percent
400	6	3,1
401–800	21	11,0
801–1200	109	57,4
1201–1600	36	19,0
1601–2000	18	9,5
Total	190	100,0

Table 4.   **Benefit Matrix for the Factors Affecting Passengers' Travel Preferences**

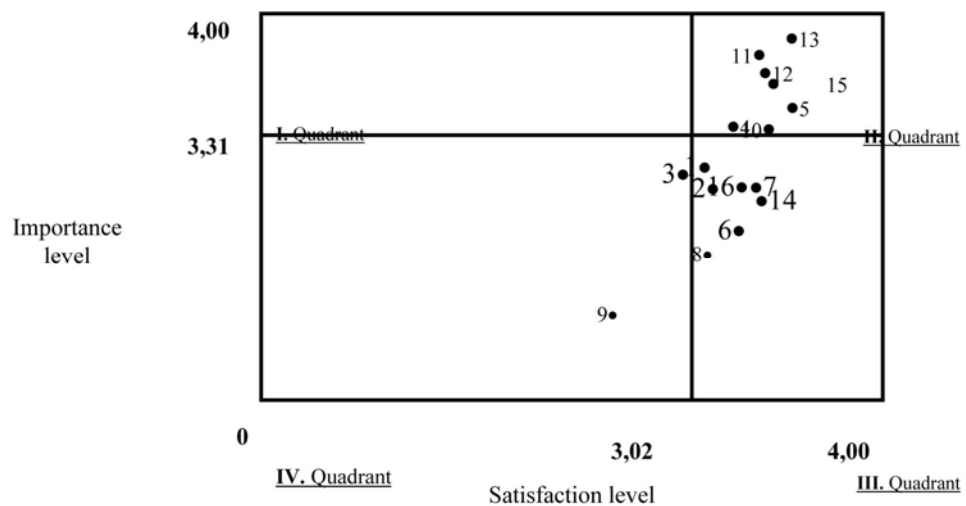| Travel Preferences	Important (mean)	Satisfaction (mean)	Benefit
1. Convenience of schedules	3,31	2,77	9,1687
2. Convenience of flight line	3,16	2,88	9,1008
3. Ticket fares	3,29	2,70	8,8830
4. Airline images	3,51	3,27	11,4777
5. On time performance	3,60	3,16	11,3760
6. Aircraft type	3,08	2,98	9,1784
7. Aircraft comfort	3,20	3,03	9,6960
8. Quality of catering services	2,90	2,86	8,2940
9. Paid catering services	2,36	2,46	5,8056
10. Behavior of the staff	3,44	3,11	10,6984
11. Flight Safety	3,76	3,37	12,6712
12. Baggage services	3,60	3,08	11,0880
13. Security	3,86	3,42	13,2012
14. Design and availability of online services	3,16	3,07	9,7012
15. Cabin cleanliness	3,54	3,12	11,0448
16. Meeting special requests in check-in and boarding	3,13	3,01	9,4213
Total	52,9	48,29	
Threshold	3,31	3,02	
Total benefit			160,8063
Average ticket price (YTL)	108,21		
Calculated value	1,4860		

Figure 1. Expectation Matrix for the Factors Affecting Passengers' Travel Preferences

The Research on the Interaction Development between the Producer Services and Manufacturing Industry

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Abstract

Under the modern of division of labor, the relations between the service and manufacturing industry have become more and more close and interactive. This paper analyzes the relationship and the mechanism of the service and manufacturing industry and put forward the four modes. And from the viewpoint of increasing industry relevance, service outsourcing, enhancing the core innovations ability as well as the achievement of the industrial pattern and industrial cooperation, this paper indicates strategic road mapping and suggestions of China's interactive development in service and manufacturing industry

Keywords: Producer services, Manufacturing industry, Interactive model, Service outsourcing

With the development of the tech and knowledge economy, it is hard to distinguish the boundary between the service and manufacturing. It has the trend of mutual promotion and mutual fusion. The service can offer the tech for the development of the manufacturing and make further support for the strategic adjustment of the manufacturing. And also, service may promote the process of industrialization and economy growth through the integration of the modern industry.

1 .the analysis on the relationship between the producer service and manufacturing industry

1.1 The definition of the producer service

In 1966, American economist H.Greenfield propose the definition of it when study on the classification of the service industry. And producer services mean that the producer offer the intermediate input service for the outside enterprises and the demander and the other producing activity which is used to business operation and further production. The producer utilize the acknowledgement, human resource as the main input and produce service product which have many acknowledge capital and human capital.

Insert Table 1 Here

1.2The role of the producer service

(1)The integration of industrial chain

The enterprise of the producer service offer the outsourcing and it has composed of the node of the industrial chain's joint. And it is also the node of acknowledge, so the producer service has the typical function of the industrial chain.

(2) The integration of innovation

The enterprise of the producer service is included in the special division network, and it has played a joint role for the industrial chain. The producer service may lead to the development of the relative producer service. All of these may build up a complex network which may contribute to the innovation of them.

Insert Figure1 Here

(3) The allocation effect-Pareto improvement

The producer may improve the operation efficiency of the industrial chain and may decrease the transaction cost as well as the free allocation in the marketplace. Because of the flow of the resource the resource may has the trend to point of

relative advantage and at last lead to the high allocation efficiency.

1.3The orientation of the relation between Producer Services and manufacturing

For the relation between Producer Services and manufacturing, there are four main views in theory research: "On the demand to comply with", "supply-led" and "interactive" and "integration theory."

(1) On the demand to comply with

"On the demand to comply with" can be defines as manufacturing is the premise and foundation of service industry(include Producer Services),the development of Producer Services under the demand to comply with, that is its economic growth is influenced by the expansion of manufacturing, which leads to the demand of services. Therefore, the development of service industry is subject to the development of manufacturing.

(2) Supply-led

"Supply-led" believe that service industry, in particular Producer Services, is the premise and foundation of improvement of manufacturing productivity, without well-developed Producer Services, it is impossible to shape competitive manufacturing sectors.

(3)Interactive

"Interactive" believe that Producer Services sectors and manufacturing sectors are interactional and interdependent. The inherent mechanism of "interactive" is that with the expansion of manufacturing, greater demand on Services just as Trade, finance, transportation, and social services. This will improve the productivity of the manufacturing sector. On the contrary, the growths of Producer Services sectors also depend on increase of intermediate input of manufacturing sectors. Moreover, with the improvement of economic development, this degree of dependence gets more and more.

(4) "Integration theory"

"Integration theory" is the recent view. It believes that with the wide application of information and communication technology, the boundary between Producer Services and manufacturing becomes increasingly blurred, it emerged the integration trends.

Four of the above-mentioned point of view "On the demand to comply with" and "supply-led" are too extreme, they lack of comprehensive and in-depth analysis. "interactive" is more practical and realistic, and "integration theory" reflect the evolution of future industry trends. Therefore, it should adopt interactive strategy and focus on future-oriented integration development strategy.

2. The significance of Interactive development between product service and the manufacturing

Service industry especially producer services have become the fastest-growing sector in the economic structure of developed countries in the West ., the added value of producer services, such as finance, insurance, real estate and business services, accounted for more than 1 / 3 in the gross domestic product in the countries of OECD. The trends of mutual integration development between manufacturing and service industries had emerged.

2.1 The significance of Interactive development between product service and the manufacturing

(1) Producer Services is the essential elements of product differentiation and product proliferation

In the value chain curve of the manufacturing, manufacturing process has always been in the low-end segments. While Product development, after-sales services were in a high-end in the value chain curve. The difference among enterprise value chain determined the product differentiation. And it is the key of competitive advantage.

Insert Figure 2 Here

The added of intermediate input services made the relationship between the service and the manufacturing increasing closely. The same as industrial products, service may be also classified as intermediate products and final products. The modern industries product has integrated more service as the elements of intermediate inputs. The expansion of intermediate demand is the main driving force for the service sector growth.

(2) The developing of producer services reduce transaction costs in the manufacturing sector

According to the modern theory of institutional economics, the producing cost of the manufacturing sector includes material conversion costs (i.e. production costs) and transaction costs. Producer services are the intermediate business services provided for the enterprise by the Enterprise. Its most important function is to reduce transaction costs, in particular, is to reduce information costs.

On the one hand, having an increasing number of specialized manufacturers and all kinds of experts, is an important feature of modern Productive services sector; On the other hand, under conditions of a market economy, producer services firms is a major vector-borne. Through these mediators, human capital and knowledge capital of community-owned can be released, and continue to supply through the price mechanism of the kind of commodity

production in the economy.

Therefore, the production of the service sector is the Flywheel which brings the human capital and knowledge capital of growing professionalization into commodity production sector, which constitutes these channels of the capital entering the production process.

Finer division of labor in society, the higher transaction costs, the greater the need for intermediary organizations to provide production services.

At present, the total added value of the developed countries in Production services has account for a half of all value-added services.

(3) The producer service offers the intelligence service.

In modern society the human resource and the intelligence capital has played a more and more important role. The intelligence service such as the feasibility of the investment project and the product design and the information tech service and so on have promoted the specialization of the enterprises and enhance the efficiency of the enterprises.

(4) The outside activity leads to the new produce service's development

The outside transaction activity of the enterprises may contribute to the new kind of service. Because the outside transaction may bring the new intermediate service input and the new service are always the new producer service. So the producer service has developed a lot in the recent few years, which has made the producer service, become the main industry of the rapid growth service.

Most of the industries are emerging service industries with the business activities developed. Business activities increase the use of intermediate inputs external service which comes from the service industries. As a result of business activities external linked in the past ten years, emerging producer services have been in rapid development in these years.   The service sector has become a "leading" industry in the service industry's growth. So the external of business activities is a very important factor for the growth of producer services.

2.2 Models of Interactive development of Producer service Industry and manufacturing Industry

(1) Manufacturing-centered interaction development model

This interactive development model takes one manufacturing enterprise as the core and a cluster of small high-tech services enterprises surrounding this core business. This core enterprise outsources its non-essential resources (mainly technical and informational services) to the surrounding technical service business; this central enterprise forms a symbiotic interaction model with the small companies around the center.

(2) Pyramid interactive development model

This type of model bases the existence of the two industries on cooperation and long-term relationship. Due to nature of the long-term cooperation between upstream businesses and their relatively stable and limited number of clients, it is easy to create close and interdependent cooperation relations through communication and coordination with each other. Or else, the whole model will not work out as Granovetter (1973) described the dangers of weak links. In this model, members on the network believe that the maximum common interests only come from long-term cooperation and interactions with each other.

(3) Parallel interactive development model

This model is composed of two or more core enterprises which possess different technical resources, relying on mutual cooperation to complete the production activities. The relationship between enterprises is based on equality, mutual benefit and sharing of complementary advantages. The "parallel model" (Figure 5) got its name because of the equal footing between or among the enterprises in the model. The feature is that the efficiency of the whole model is relying on close co-operation and coordination among all enterprises in this model. Compared with other types, this model is relatively more secure and stable. However, as the model structure is loose without a leader or center, contacts between members can be limited. Consequently, this model is not conducive to the overall formation of a strong industrial chain.

(4) Nested-based interactive development model

This model is constituted of a lean central management institution and externally connected entities which are executing outsourced contracts. And these external agencies are essentially the organizations which are responsible for carrying out key business activities such as R & D, manufacturing, sales, different services.   These external organizations are integrated and "independent" parts of the symbiotic interaction organizations. With a core of a group of strategic alliance partners which has a sizable and inter-related outsourcing need, this model has a large number of small and medium enterprises surrounding its center core.

3. Strategies and recommendations on interactive development between Producer service and manufacturing industries

3.1 Strengthening of Industrial Coordination and Improvement of the interaction between producer services and manufacturing

The implementation of "Separation of the Primary and the Secondary" industries and the advance of market-oriented, socialization of Built-in services in manufacturing enterprises promotes a healthy manufacturing industry chain derivative, which constantly attracts or creates new producer services, promotes the formation of different functional groups, and facilitate the establishment of the "group to group" best interactive mode. With the spread of the foreign manufacturing sector, the appropriate approach is to attract service industries into servicing those foreign investments. The consequent impact could change current primitive-stage part of the manufacturing into part of the industrial chain which has effectively integrated manufacturing and service from a global view. There are some other issues to consider now. With all these development, there is no the need to improve the condition of labor and employment, integrate businesses' internal resources, and strengthen the businesses' own initiatives to make informed decisions or strategies. Gradually, these two industries will find guidance on their own to promote new methods of management through innovation and business process reengineering. Then there will be a multi-staged shift to a focus on the development of technology research and development, market expansion and brand promotion. The result will be a spin-off of some non-core aspects of the producer services to generally social professional services. This will consequently drive further integration process; enhance the servicing capacity of those enterprises with the core competitive advantages to develop industry specialization with a new division of labor.

3.2 Development of outsourcing model of producer services and extension of the whole manufacturing industry chain

In recent years, service outsourcing and the transfer has become a bright or controversial spot to start a new round of global industrial layout adjustment, especially in multinational corporations. Accepting outsourced services can help businesses gain opportunities not only from these multi-national corporations taking this "refocusing" strategy, but also from providing other relevant business services to manufacturing multinational corporations by extending manufacturing industry chain. Therefore, the development of outsourcing service can make those investors confident in stable and on-target return; secondly, it can create employment opportunities; the final and most important is to the availability of access to the headquarters of the multinational companies' outsourcing service strategy, and further adjusts the service sector to extend the operational chain of transnational corporations.

3.3 Acceleration of Strengthening Core Competencies in the Manufacturing Sector and Promotion Developing Service Industry

Producer service emerged as a result of division of labor with the development of manufacturing industry. This particular service industry based its existence on meeting the needs from the manufacturing sector. The social division of labor, service outsourcing, and further industrial subdivision in manufacturing sector make this producer service both a unique and essential entity of the whole economy. The upgrading of manufacturing sector often requires expertise and knowledge from a variety source of inputs. Thus the demand promotes the development of producer services. As competition intensifies, manufacturers are increasingly outsourcing non-core businesses and focusing on strengthening its core competitive advantages, requiring streamlining of the internal structure of its own and outside services. However, the driving force of developing the manufacturing industry depends on not only the industrial own knowledge needs, but also the capability of the producer service sector to provide more and more professional advice and expertise with its in-depth understanding and knowledge of its manufacturing customers. Manufacturing industry's self development to compete internationally to best meet customer drives the development of producer services which have become more productive in its output and become an increasingly important economic sector, the development of producer service, in turn, enhances the advance of the manufacturing sector. It is safe to say that interactions between and developments of the two industries have helped each other to grow their own competitiveness.

3.4 Resource Integration and Development of Service Industry Zone

With the goal of meeting the demands of manufacturing sectors, the proposal is to specifically set up services business area in the city to expand the economic impact in neighboring rural areas; In addition, there is also a potential to reduce further the cost of operating these existing manufacturing or industrial clusters by building up public or commercial infrastructure. In turn, these measures will minimize transaction costs and optimize the investment environment; In the vicinity of high-tech or knowledge-intensive manufacturing sector, it is of special significance to set up a carefully designed platform to provide support for the industry's particular needs for   such areas as R & D, legal, engineering, finance, information, logistics support system. Municipal policies can also be created and implemented to enhance this knowledge industry's competitiveness.

The developments of manufacturing and service sectors highly correlated with the coordination and interactions between the two industries. Both theory and available evidence point to the fact that upgrading the manufacturing industrial structure updating depends not only on the effort of the manufacturing sector itself but also depends on the

development of the other industries. Service industry plays a key role on help manufacturing industry overcome the bottleneck of development. The cooperation and interaction between the two industries will strengthen the linkage and create synergy for the upgrading of manufacturing industry to compete internationally.

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Table 1. The Classification of the Producer Service in Different Country

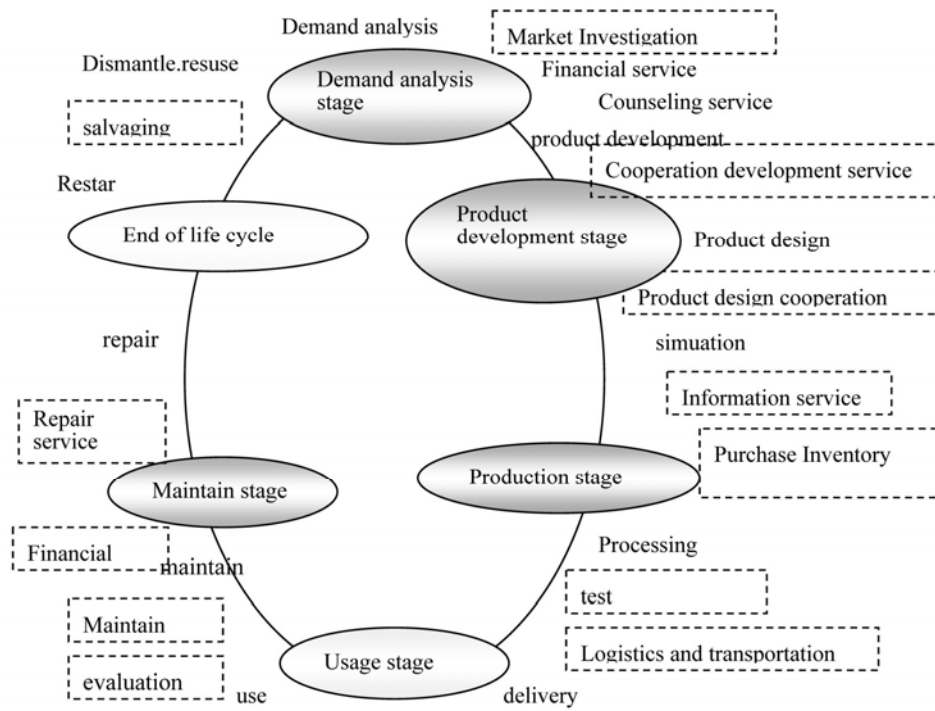| country	the classification of the producer service
USA	Finance insurance, real estate, business service, legal services,
Germany	Transport, storage, sales, management and R&D
Britain	Distribution, waste disposal ,Transport Finance insurance, advertisement, R&D, trade
Japanese	Management , medical treatment, entertainment, housekeeping
Canada	Finance insurance, real estate, business service, legal services, training of manpower
China	Finance insurance, real estate, tenancy, information transmission, computer service and soft , tech service, Transport, storage and logistics
OECD	Accounting, management consult, real estate, equipment management, R&D, environment service, computer service and soft, legal services, accounting

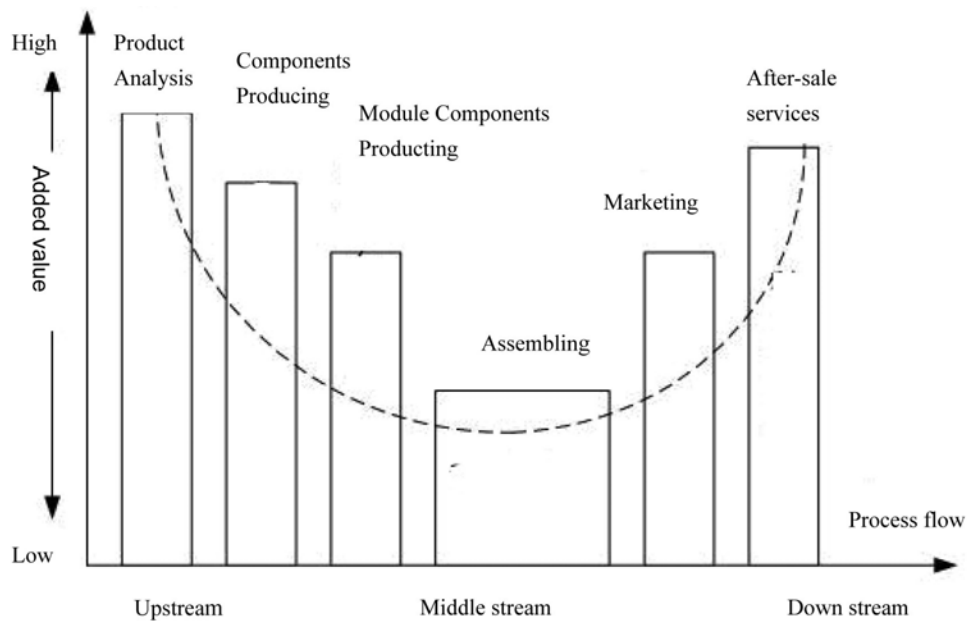Figure 1. The Value Chain and Activity of Manufacturing Industry

Figure 2. The Curve of Value Chain in Manufacturing

An ARDL Approach in Food and Beverages Industry Growth Process

in Malaysia

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Abstract

The study examines the process of growth in the value added of food and beverages industry in Malaysia. The per capita income, population, skill and export are likely to exhibit long run relationship with the value added growth of this industry. Using the newly developed autoregressive distributed lag (ARDL) by Pesaran *et al*, (1995,1997, 1999 and 2000), a long run steady state equilibrium relationship between the independent variables and the growth performances of food industries is detected. Specifically this study has shown that in addition to the size of the population and percapita income, export are closely related to the growth of the value added of food and beverages industry. This empirical result would help Malaysia aspiration of becoming a hub for the halal food industry a reality.

Keywords: Value added, Error correction model, Halal food, Food and beverages, Growth

1. Introduction

The manufacturing sector is the fastest growing sector and the dominant force in Malaysia's growth experience.   The structural transformation in the Malaysian economy has turned the country from an exporter of primary commodities into an exporter of high value added manufactured products. During the early process of development in the Malaysian economy, there occurred a dramatic decline of the proportion of GDP generated by the primary sector. It was counterbalanced by a dramatic increase in the share of industrial sector and by a modest increase in the share of the service sector. The agriculture sector's share in GDP declined from 22.3 percent in 1980 to 8.7 percent in 2002, the contribution of the industrial sector grew from 38.5 percent in 1980 to 44.5 percent in 2002   (Table 1). Based on the theory of structural change by Fisher and Clark (1957), Malaysia was categorized as a middle-income country concerned with industrial production through manufacturing.

<Table 1: Malaysia GDP By Kind of Economic Activity at 1978 Constant Prices, 1980 – 2002>

Unfortunately, even though the Malaysian manufacturing sector had experienced rapid export demand, this surge in demand had not been uniform across all industries. The rapid export growth from a set of industries did not imply that these industries were also displaying high demand growth in world markets. The annual growth of the manufacturing industry did not perform as well as its share to GDP. During the 1982 to 2002, the annual growth of manufacturing sector decreased sharply (Table 2). This condition was reflected in the Malaysian phase of industrialization, where the government policy towards industrialization kept changing over a period of three decades. The policy of the 1960s was the import substitution policy, followed by the export orientation in the 1970s, and in the 1980s it shifted back to import substitution policy. This indicated that growth in some industries and stagnation or decline in the manufacturing sector was not well balanced in terms of its contribution to the overall economy.

<Table 2 : Indicator of Manufacturing Performance: 1982 – 2002>

The food and beverages industry are one of the most important sector in the manufacturing industry. Under the Malaysian Standard Industrial Classification (MSIC) 2000, the food and beverages industry are classified under Division 15, and in the year 2000 these sector which constitute of sector 151, sector 152, sector 153, sector 154 and

sector 155 valued at RM8,142,057 Million. Detail information regarding the classification is given in the Table 3 and the detail description of item under halal category is in Appendix 1.

<Table 3: Definition of each sector under food and beverages>

Manufacturing is defined as the mechanical of chemical transformation of inorganic or organic substance into new products whether the work is performed by power driven machines or by hand, whether it is done by the factory or in the workers home, and whether the products are sold at the wholesale or retail. (Department of Statistic,2000). Halal foods according to Malaysia External Trade Development Corporation means that all the ingredients used in manufacturing the products are approved Islamically. Where meat products are concerned, the halal certification is awarded when the producer has strictly followed procedures for slaughtering, processing and other related operations as prescribed by Islam.

Much have been said about making Malaysia a hub for halal food but has the country become one yet? Prime Minister Datuk Seri Abdullah Ahmad Badawi in launching the MIHAS (International Malaysia Halal Showcase) 2004 in his speech said that the goal of establishing Malaysia as global halal hub has been the aim of the Malaysian government for several years. According to MITI (Ministry of International Trade and Industry), at present there are no comprehensive figures on the performance of halal food production in Malaysia but the size of the market can be seen by looking at the import and export of processed food. The potential market for halal food is estimated in the range of RM1.3 trillion to RM1.5 trillion per year based on the world Muslim population of about 1.8 billion. In Malaysia itself with 60% of population being Muslim and if we estimate the per capita expenditure on food as RM1 a day, then the demand for halal product is more than RM5 billion a year.The demand for halal food is expected to expand progressively in view of the increasing trend among Muslims to observe dietary obligations. Under the Third Industrial Master Plan (2005-2010), is to position Malaysia as an international halal food hub and several potential sectors in food processing are identified.

Hence, in this study, the first issue is to examine the process of growth of food and beverages value added in Malaysia. It is hoped that the independent variables that show stable long run co-movement with the value added of food and beverages industry, will be helpful in the planning and monitoring the performance of this industry.   It is also important to investigate any regularity that underlies the food and beverages sector during the industrialization process. In reviewing the related scenario, this study examines the growth process of food and beverages industry in Malaysia. To accomplish our tasks, the study adopts the newly proposed autoregressive distributed lag (ARDL). The rest of the paper is organized as follows. The next two sections discuss the definition of variables and methodology of this study. This is followed by interpretation of result. The final section concludes the paper.

2. Definition of food and beverages industry variables

In the study of relative growth of manufacturing industries formulated by Chenery-Taylor (1968), from the basic equation, the dependent variable is value added, and the independent variable is per capita income. However this study extended the model by making some modifications in order to capture the Malaysian economic conditions, by adding few important variables such as population, skill and export.

1)   Gross value added (V_i)

The value of output less the value of intermediate consumption; it is a measure of the contribution to GDP made by an individual producer, industry or sector. The measurement is in thousand Ringgit Malaysia. The suitable value will be in nominal form. The value added rather than gross output is used since value added appears to be more appropriate measure of the importance of a sector in the economy. Tamamura (2002) used value added as one of the variables to replace GDP in his study of structural change in the Asia Pacific region.

2)   Per capita income (Y)

Per capita income is an average income of a country population, it is measured by dividing the nominal GDP by the population, and the value is in the nominal form. Since per capita income is influenced by price level, it is required to change the per capita income to constant price and the value is in million Ringgit Malaysia.

3)   Population (N)

Data for years 1970 – 1990 were compiled from Revised Intercensal Mid-year Population Estimates. The population estimates for 1991 – 2000 are based on the 1991 Population Census data which had earlier been adjusted for under-enumeration and to mid-year and subsequently projected to currents years. These projections are derived based on assumption of components of fertility, mortality and migration. The measurement is in thousand.

4)   Export of goods (X)

It consists of exports of the following items from residents to non-residents, generally with a change of ownership involved: general merchandise, goods for processing, repairs of goods, goods procured in foreign ports by domestic

carriers and non-monetary gold. The measurement is in thousand Ringgit Malaysia and in the nominal form. Exports have become a very important indicator in Malaysia's economy especially since the 1980s.

5)   Skill intensities (S)

Skill intensities in this study representing technical workers and skilled workers. Technical workers are those with technical knowledge with diploma and certificates, while skilled workers are those with formal training that is required by the firm. In other words, firms have given enough training to their workers in terms of production and handling equipment. Measurement that will be used is number of technical and skilled workers (citizen and non-citizen) for that particular year. Gera and Mang (1997), in their study of Canada industrial output concluded that industries with higher skill requirements have consistently accounted for a larger proportion of total manufacturing output than their more moderately skilled counterparts.

Thus we can formulate a relationship between value added and the independent variables as follows:

$$\ln V_i = a + b_1 \ln Y + b_2 \ln N + b_3 \ln X + b_4 \ln S + e_i \tag{1}$$

3. Methodology

We employ the bounds testing procedure developed by Pesaran *et al.* 1996 (see Pesaran and Pesaran,1997; Pesaran and Shin, 1999; Pesaran et al., 2001), within an   autoregressive distributed lag framework (ARDL). This procedure has several advantages over alternatives such as the Engle and Granger (1987) two-step residual-based procedure for testing the null of no cointegration and the system-based reduced rank regression approach pioneered by Johansen (1988,1995) and Johansen and Juselius, 1990.

The first main advantage is that the bounds test approach can be applied regardless of the stationary properties of the variables in the sample and allows for inferences on long run estimates, which is not possible under alternative cointegration procedures. Second, the unrestricted error correction model (UECM) is likely to have better statistical properties that the two-step Engle-Grangerr method because, unlike the Engle-Granger method the UECM does not push the shot-run dynamics into the residual term (Banerjee et al., 1993,1998). The other major advantage of the bounds test approach is that it can be applied to studies that have a small sample size.

Thus, the following ARDL (a, b, c, d, e) model will be estimated:

$$\Delta V_t = \mu_0 + \sum_{i=1}^{a} \delta_{1i} \Delta V_{t-i} + \sum_{i=0}^{b} \delta_{2i} \Delta Y_{t-1} + \sum_{i=0}^{c} \delta_{3i} \Delta N_{t-i} + \sum_{i=0}^{d} \delta_{4i} \Delta S_{t-i} + \sum_{i=o}^{e} \delta_{5i} \Delta X_{t-i}$$
$$+ \delta_6 ECT_{t-1} + \varepsilon_t \tag{2}$$

where each variable is as defined before.

The bounds test procedure involves two stages. The first stage is to establish the existence of a long run relationship. Once a long run relationship has been established, a two step procedure is used in estimating the long run relationship predicted by theory among the variables. Suppose that with respect to equation (1), theory predicts that there is a long-run relationship among ln V_i, ln Y_t, , ln N_t, ln X_t and ln S_t. Without having any   prior information about the direction of the long-run relationship among the variables, the following unrestricted error correction regressions are estimated (for Eq. (1)), taking each of the variables in turn as a dependent:

$$\Delta \ln V_t = \mu_0 + \sum_{i=1}^{a} \delta_{1i} \Delta V_{t-i} + \sum_{i=0}^{b} \delta_{2i} \Delta Y_{t-1} + \sum_{i=0}^{c} \delta_{3i} \Delta N_{t-i} + \sum_{i=0}^{d} \delta_{4i} \Delta S_{t-i} + \sum_{i=o}^{e} \delta_{5i} \Delta X_{t-i}$$
$$+ \lambda_{iv} \ln V_{t-i} + \lambda_{2v} \ln Y_{t-i} + \lambda_{3v} \ln N_{t-1} + \lambda_{4v} \ln S_{t-1} + \lambda_{5v} \ln X_{t-1} + \varepsilon_{it} \tag{3}$$

When a long-run relationship exists, the F-test indicates which variable should be normalized. The null hypothesis for no cointegration among the variables in Eq. 3 is $H_0 : \lambda_{iv} = \lambda_{2v} = \lambda_{3v} = \lambda_{4v} = \lambda_{5v} = 0$, denoted by F_v (V/ Y, N, S,X) against the alternative $H_0 : \lambda_{iv} \neq \lambda_{2v} \neq \lambda_{3v} \neq \lambda_{4v} \neq \lambda_{5v} \neq 0$. Similarly for the rest of the equation with different dependent variables.

If the computed F statistics falls outside the critical bounds, a conclusive decision can be made regarding cointegration without knowing the order of integration of the regressors. For instance, if the empirical analysis shows that the estimated F_v ( ) is higher than the upper bound of the critical values then the null hypothesis of no cointegration is rejected. Once a long run relationship has been established , in the second stage, a further two step procedure is estimate the model is carried out. First the order of the lags in the ARDL model are selected using the Schwartz Bayesian Criteria (SBC) and in the second step the selected model is estimated by the ordinary least squares technique.

4. Result and interpretation

The first step in the analysis of this study is to check for the stationarity of all the variables (both dependent and independent variables). The unit property of the series is crucial for cointegration and causality analyses, which will be examined using the Augmented Dickey Fuller (ADF) tests. Table 4 reports the Augmented Dickey-Fuller test results in level and first difference at constant error trend.

<Table 4: The Unit Root Test for Non-Stationarity>

The results indicate that the null hypothesis of a unit root could not be rejected for all variables in levels except variable X (export) and V2. However, the hypothesis of unit root was rejected at the first difference for most of the variables as presented in Table 4. Since all the variables are not integrated at the same order, we proceed to test the cointegration of both dependent and independent variables by using ARDL.

We start the second step by testing the presence of long-run relationship. The bounds approach compares the calculated F-statistics against the critical value are reported in Table 5. For all the five equations the computed F-statistic that exceed the upper critical value at 1 percent and 10 percent, indicating that there is a unique cointegration relationship among the value added of food industry, per-capita income, population, export and skill.

<Table 5:Test for Cointegration Relationship>

Before going to the detailed explanation of the ARDL results, Table 6 presents the diagnostic tests of each equation. The ARDL coefficients integrate the short-run dynamics in the long-run relationship of the variables. Given that the regressors are cast in the first difference, the empirical results indicate a satisfactory statistical fit, as judged by the adjusted – R^2. The statistic tests for residual serial correlation do not reject the null hypothesis of no serial correlation in the residuals at 5 percent level for 2 out of 5 dependent variables. According to the J-B and Arch tests, heteroscedasticity does not pose any problem in any of the relationships at 10% level for 5 dependent variables. The test statistics also do not reject the hypothesis that the estimated equations possess a normal distribution.

<Table 6: Diagnostic Testing for ECM model>

4.1 Long Run Relationship

The primary focus of this study is to examine the long run effects of Y(per capita income), N (population), X (export) and S (skill) on the value added of food and beverages industry. The estimated long run coefficients of the relative growth of manufacturing industries model are presented in Table 7.

<Table 7: Estimated Long Run Coefficients using the ARDL Approach>

The ARDL long run coefficients results for sector 151 (V1) have the expected positive signs and are significant except export. The long run impact of per capita income, population and skill on value added for this sector differ in magnitudes, with the greatest coming from population (10.5645), followed by per-capita income (4.2863) and skill (2.6084). The coefficient of export though positive has no significant impact on value added in this sector.

In the case of sector 152 (V2), the sign of the long run coefficients is mix. The coefficients of per-capita income(0.5067), population(2.0033), and skill(0.1814) are negative sign and export (1.1322) positive but are not significant. So, we can conclude that the empirical results suggest that there is no significant impact of per capita income, population, export and skill on relative growth of value added of sector 152 (manufacture of dairy product).

For sector 153 (V3), the long run ARDL results show that all the variables have either positive or negative signs and are significant. The results indicate that export (0.6657) and per-capita income (0.5340) are the driving force in the growth of grain mill product, starches and starch products. However, the population (-0.5418) and skill (-0.2344) tend to decrease the growth of this sector. In the case of sector 154 (V4), the results showed that there is no long run relationship between value added in manufacture of bakery product and its determinants.

Finally, sector 155 (V5), the result showed that there is a long run cointegration relationship between dependent and independent variables. The population of (12.7825) is the major factor that enhances the relative growth of beverages industry. Per-capita income (0.6564) and export (1.9030) are also important variables that strongly contribute to the growth of this sector, skill (4.2032) has a negative effect on the value added in this sector. In general, the empirical results show that the relationship between the growth in manufacturing industries and the independent variables namely

income, population, export, and skill are not conclusive.   Indeed, the long run estimated results suggest that the effect of income, population, export, and skill could be either positive or negative.

The first equation in Table 5 indicates that value added in three sectors have positive relationship with level of income. These three sectors are sector 151 (Production, processing & preservation of meat, fish, fruits, vegetables, oils and fat), 153 (Grain mill products, starches and starch products and prepared animal feeds) and 155 (Beverages). Moreover, the results presented in Table 4 indicate that there is a positive "size" effect between the growth of manufacturing sectors and the population variable. Among the five industry groups, only sector 155 (Beverages) is positively and statistically significant and sectors 151 (Production, processing & preservation of meat, fish, fruits, vegetables, oils and fat), and 153 (Grain mill products, starches and starch product and prepared animal feed), have negative signs and are statistically significant.

Taking both per capita income and population coefficients together, there is a domestic "consumption effect" in the expansion of value added of sector 155 (Beverages), With regards to exports, the results show that they are positively related to value added in two sectors, namely153 (Grain mill products, starches and starch product and prepared animal feed) and 155 (Beverages). Skill intensities are positively related to value added sector of 151 (Production, processing & preservation of meat, fish, fruits, vegetables, oils and fat) .Two sectors show negative relationships to skill intensities. The two sectors are 153 (Grain mill products, starches and starch product and prepared animal feed) and 155 (Beverages).

4.2 Error Correction Model (ECM)

At the bottom of Table 6, we present the estimated error correction terms and short run coefficients of the food and beverages industry. The result shows that the error correction terms in all sectors, except V4, are negative and significant. The findings of the manufacturing industry of divisions 15 presented in Table 6 show that in the short run, the impact of the level of income on the growth of this manufacturing industry can be both positive or negative.   The positive and significant impact of the level of income can be found in the manufacturing sector of production, processing, and preservations of meat, fish, fruits, vegetables, oils and fats (153) at lag 1.   These findings are expected as the rise in the level of income is considered crucial to demand for the products from the manufacturing of sector 153. The income elasticity in the sector is moderate and ranges between –1.65 and 0.78.

Our results could not show any impact of the level of income on in the sector 154 (Manufacture of other food products) and sector 155 (manufacture of beverages). But in sector 151 (production, processing, and preservations of meat, fish, fruits, vegetables, oils and fats) the effect of income is negative.   Secondly, the results reveal that population poses positive and significant impact on the growth of food manufacturing only in sector 153 (Manufacture of grain mill products, starches and starch products and prepared animal feeds). However the effect of population is not much in the food manufacturing industry such as the manufacture of production, processing, and preservations of meat, fish, fruits, vegetables, oils and fats, the manufacture of dairy product, the manufacture of other food products and the manufacture of beverages.   The impact of population on the growth of food manufacturing industry is very elastic with the elasticity range from 8.32 per cent to 25.83 per cent.

The third findings relate to the impact of the export on the growth of the food and beverages manufacturing industry. The results show that only sector 151 (production, processing, and preservations of meat, fish, fruits, vegetables, oils and fats) is affected by exports.   This is largely due to the fact that Malaysia is the second largest palm oil producer and most of Malaysia 's palm oil exports are processed palm oil, which is included in the production, processing and preservations,   meat, fish, fruits, vegetables, oils and fats sector.   For the Manufacture of grain mill products, starches and starch products and prepared animal feeds, the impact of export is negative. Elasticity of export range from 0.6 to 1.25 percent. The fourth findings of the food manufacturing industry show that the impact of skill variable on the growth of food industry can be positive or negative. In sector 151 skill has positive effect, while in sector 152 (dairy product) it has a negative impact. The short-run elasticity of skill range from 1.47 to 1.25.   The error correction terms for all food manufacturing industry equations (ECM (-1)) prove to be significant. This provides additional support in concluding that there is co-integration. Such a finding suggests the existence of a long-term causal relationship between the variables in the model. The negative (or positive) sign of the coefficient of the error term means that it would negatively (or positively) affect the short-term growth of the dependent variable.   However, the moderate elasticity coefficient of the error term indicates moderate response (i.e. speed of adjustment) of the dependent variable to the equilibrium level.

5. Conclusion

The main objective of this study is to examine the growth process of food and beverages industries. Results based on the ARDL analysis of manufacturing food and beverages value added shown that manufacturing output growth can be partially explained by the expansion of manufactured exports and consumption effects as indicated by positive per capita income, population and export coefficients for the majority of industrial groups.

In the long run, the impact of per capita income is found to be positive in four equations, and significant in three out of five equations. The magnitude of the coefficients ranges from as high as 4.2863 for sector 151 to 0.5340 for sector 153. The coefficient for population in the long run ranges as high as 12.7825 to 10.5645 for only two sectors 151 and 155. This result provides some support for "domestic consumption effect." The impact of export on relative value added growth rate is found to be positive in four equations and significant in only two, with the range of 0.6564 to 0.6657. This implies that manufacture of grain mill products, starches and starch products and prepared animal feeds and manufacture of beverages are export oriented. In general, the study concludes that the growth of value added in food and beverages industry depends closely on per capita, population and export. This empirical result hopefully would help make Malaysian aspiration of becoming a hub for the halal food industry a reality.

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Table 1.   Malaysia GDP By Kind of Economic Activity   at   1978 Constant Prices, 1980 - 2002

Economic Activities	Percent share of GDP					
	1980	1985	1990	1995	2000	2002
Agriculture	22.3	20.3	16.3	10.3	8.9	8.7
Mining and quarrying	12.8	13.3	9.4	8.2	7.3	7.2
Manufacturing	18.5	18.5	24.6	27.1	31.9	29.9
Electricity, gas and water	2.2	2.5	2.7	3.5	3.9	4.1
Construction	5.0	5.2	3.5	4.4	3.3	3.3
Wholesale and retail trade, hotels and restaurants	13.1	13.1	13.2	15.2	14.8	14.9
Transport, storage and communication	5.9	6.6	6.7	7.4	8.0	8.6
Finance, insurance, real estate and business services	7.7	8.3	8.2	10.4	12.7	15.1
Other services	7.3	7.2	7.2	7.7	7.6	8.2
Government services	9.6	11.4	8.8	7.1	6.8	7.2
Less Imputed bank service charges	2.3	3.8	4.4	5.3	7.5	9.6
Plus Import duties	5.2	4.4	3.7	4.1	2.2	2.4

Source: Annual National Product & Expenditure Accounts, 1987 – 2002, Department of Statistic   (2004)

Table 2. Indicator of Manufacturing Performance: 1982 – 2002

Year	Value of real output (RM Million)	Annual growth rate of output (%)	Value of real output as % GDP	Export of Mfg goods (RM Million)	Export of Mfg goods as % of total Export.	Annual Growth Rate of Mfg. Exports (%)
1982	30,943		49	7,950.5	28.3	
1983	32,942	6.5	47	9,883.80	30.2	22.9
1984	35,016	6.3	44	11,510.40	29.8	15.9
1985	35,670	1.9	46	11,973.20	31.5	3.8
1986	36,262	1.7	51	13,991.90	39.2	25.3
1987	41,354	14.0	51	18,765.00	41.5	31.3
1988	48,983	18.4	53	25,303.50	45.8	28.4
1989	58,510	19.4	56	34,536.00	51.1	28.6
1990	69,230	18.3	58	44,018.60	55.3	28.6
1991	83,021	19.9	61	58,212.10	61.6	29.8
1992	90,888	9.5	60	67,869.10	65.5	15.7
1993	104,475	14.9	61	85,559.80	70.6	23.6
1994	122,993	17.7	63	114,797.40	74.6	31.9
1995	153,846	25.1	69	140,095.70	75.7	18.5
1996	277,885	80.6	110	151,189.50	76.7	5.9
1997	296,241	6.6	105	171,058.30	77.4	12.4
1998	na	na	na	228,428.50	79.7	28.5
1999	342,549	na	114	260,855.70	81.1	14.3
2000	412,763	20.5	120	303,359.80	81.3	15.8

Source: Malaysia Economic Statistic-Time Series 2002, Department of Statistic(2003)

Table 3. Definition of each sector under food and beverages

Sector	Classification
151 (V1)	Production, processing & preservation of meat, fish, fruits, vegetables, oils and fats.
152 (V2)	Manufacture of diary products
153 (V3)	Manufacture of grain mill products, starches and starch products and prepared animal feeds.
154 (V4)	Manufacture of bakery products.
155 (V5)	Manufacture of beverages

Note: ( ) denote definition that we are going to use now on for each sector.

Table 4. The Unit Root Test for Non-Stationarity

Variables	Level		irst Difference	
	Constant No Trend	Constant With Trend	Constant no Trend	Constant with Trend
Y	-1.1707	-3.3131	-6.0514***	-6.1424***
N	-0.15072	-3.2148	-5.2158***	-5.0372***
X	-0.41527**	-2.6207	-6.5312***	-6.4422***
S	-0.41840	-2.2923	-3.5328**	-3.5093
V1	-5.8308**	-5.9843**	-3.3987***	-3.8207***
V2	-3.4845**	-2.0595	-3.9428***	-5.4114***
V3	-1.4429	-2.4755	-2.8116	-2.7288**
V4	-0.9336	-1.6485	-6.0478***	-6.5966***
V5	-2.8990	-1.1688	-2.5664	-3.3578

Note:

The null hypothesis is that the series is non-stationary, or contains a unit root. The rejection of null

hypothesis for ADF test is based on the MacKinnon Critical Values

** indicates the rejection of the null hypothesis at 5 % significance level.

***indicates the rejection of the null hypothesis at 1 % significance level

Table 5. Test for Cointegration Relationship

	F-statistic				
3 digit MSIC 2000	V1	V2	V3	V4	V5
FΔV/ (ΔV, Y, X,N,S)	5.1709***	3.6797*	5.6947***	3.749*	3.4606*
FΔY/ (ΔY, V, X,N,S)	2.0504	1.9811	2.4806	1.8058	2.0949
FΔX/ (ΔX, V, Y, N,S)	0.9093	0.9874	1.4585	0.7403	2.2818
FΔN/ (ΔN,V,Y, N,S)	1.2704	1.0786	1.0789	1.0163	0.9493
FΔS/ (ΔS,V,Y, X, N)	1.7585	1.5937	0.92	1.8852	2.1294

Notes: The relevant criteria value bounds are given in Table C1(iii): unrestricted intercept and no trend; number of regressors=5 (Pesaran et.al. 2001). The critical values are 2.26 –3.35 at the 90 % significance level, 2.52 –3.79 at the 95% significance level and 3.41-4.68at 99% significance level. Asterik *, **,*** denote that F-statistics falls above the 10%,5%,1% upper bound, respectively.

Table 6. Diagnostic Testing for ECM model$^{\clubsuit}$

Variables	Serial correlation	RESET (1)	NORM (2)	HET (1)	Adjusted-R^2
V1	2.33 (0.13)	0.25 (0.77)	2.77 (0.25)	0.17 (0.67)	0.98
V2	0.61 (0.44)	1.04 (0.18)	3.12 (0.21)	2.52 (0.11)	0.97
V3	1.02 (0.19)	1.41 (0.24)	0.94 (0.63)	2.15 (0.14)	0.99
V4	0.01 (0.94)	0.51 (0.68)	0.55 (0.56)	2.65 (0.10)	0.99
V5	0.21 (0.45)	0.88 (0.44)	1.34 (0.21)	1.52 (0.26)	0.99

Note: the figures in ( ) indicate the p-value. Asterisk *, ** and *** denote significant at 10%, 5% and 1% critical level, respectively.

$^{\clubsuit}$ ECM model:

$\Delta 151 =$ 23.1228** - 0.7258ECMV1$_{t-1}$*** - 0.45315lnΔV1$_{t-1}$*** - 0.29298lnΔV1$_{t-2}$*** + 0.49072ΔlnY$_t$ - 1.6504ΔlnY$_{t-1}$*** + 2.5218ΔlnN$_t$ + 0.63924ΔlnX$_t$** + 1.2266ΔlnX$_{t-1}$*** + 0.60436ΔlnX$_{t-2}$*** + 1.2536lnS$_t$***

$\Delta 152 =$ -0.3934 – 0.3246ECMV2$_{t-1}$*** + 0.20784ΔlnY$_t$ + 0.5391ΔlnN$_t$ + 0.1294ΔlnX$_t$ – 0.35927ΔlnS$_t$

$\Delta 153 =$ 37.4918*** - 0.5594ECMV3$_{t-1}$** - 0.32951ΔlnV3$_{t-1}$ – 0.4696ΔlnV3$_{t-2}$** - 0.56628ΔlnY$_t$ + 0.7813ΔlnY$_{t-1}$*** - 1.2220ΔlnN$_t$ + 8.3245ΔlnN$_{t-1}$* + 25.8329ΔlnN$_{t-2}$*** - 0.10219ΔlnX$_t$ – 0.3671ΔlnX$_{t-1}$** + 0.18658ΔlnSt + 1.4758ΔlnS$_{t-1}$*** - 0.50507ΔlnS$_{t-2}$

$\Delta 154 =$ -17.0306 – 0.6678ECMV4$_{t-1}$ – 0.31714 lnΔV4$_{t-1}$ + 0.12806 ΔlnY$_t$+ 0.15981 ΔlnX$_t$ + 0.96627 ΔlnN$_t$ - 0.83167ΔlnS$_t$ + 0.41443ΔlnS$_{t-1}$

$\Delta 155 =$ -22.5948 – 0.8825ECMV5$_{t-1}$** + 0.68118ΔlnY$_t$ – 0.91891ΔlnY$_{t-1}$ + 1.9365ΔlnN$_t$ – 0.11282ΔlnX$_t$ – 0.42879ΔlnX$_{t-1}$ – 0.94404ΔlnS$_t$ + 1.3323ΔlnS$_{t-1}$

Table 7. Estimated Long Run Coefficients using the ARDL Approach

	INPT	YLOG	NLOG	SL0G	XL0G
V1	50.0505**	4.2863**	10.5645***	2.6084***	0.2122
	(2.4637)	(2.5011)	(-4.8317)	(5.0374)	(.28545)
V2	25.7474	-0.5067	-2.0033	-0.1814	1.1322
	(1.1367)	(-0.23913)	(-0.59221)	(-0.22023)	(1.7619)
V3	9.1069***	0.5340**	-0.5418**	-0.2344**	0.6657***
	(7.0430)	(3.1265)	(-3.0643)	(-3.1612)	(13.3126)
V4	-110.0354	3.5529	19.9100	-8.5483	-0.7242
	(-1.3803)	(0.8881)	(1.5165)	(-1.3810)	(-0.5417)
V5	-73.7671***	1.9030***	12.7825***	-4.2032***	0.6564**
	(-23.5108)	(12.8349)	(29.7211)	(-38.9880)	(-8.40561)

Note: t-values given in ( )

*,** and *** indicate significant at 0.1,0.05 and 0.01 marginal value

INPT represents the intercept term, Y (per capita income), N (population),

X (export), S (skill)

Appendix 1: Detailed description of item under three digit classification

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151   Manufacture of vegetable and animal oils and fats

1511 15111(31110p) Processing and   preserving of poultry products

1512 15120(31140) Processing and preserving of fish and fish products

1513 15131(31131) Pineapple canning

      15139(31139) Canning and preserving of other fruits and vegetables

1514 15141(31151) Manufacture of coconut oil

      15142(31152p) Manufacture of crude palm oil

      15143(31152p) Manufacture of refined palm oil

      15144(31153) Manufacture of palm kernel oil

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152   Manufacture of diary products

1520 15201(31121) Manufacture of ice cream

      15202(31129p) Manufacture of condensed, powdered and evaporated milk

      15209(31129p) Manufacture of other dairy products

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153   Manufacture of grain mill products, starches and starch products, and prepared animal feeds

1531 15311(31161,31162) Rice milling

      15312 (31163) Flour miling

      15319 (31169) Manufacture of flour/grain mill products

1532 15321(31216) Manufacture of starch

      15322(31219) Manufacture of glucose and glucose syrup maltose

      15323(31164) Manufacture of sago and topioca flour/ products

      15329(31159p,31219p) Manufacture of other starch products

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154   Manufacture of bakery products

1541 15411 (31171p) Manufacture of biscuits and cookies

      15412 (31172) Manufacture of bread, cake and other bakery products

1542 15420(31180) Manufacture of sugar

1543 15431 (31190p) Manufacture of cocoa products

      15432 (31190p) Manufacture of chocolate products and sugar confectionary

1544 15440 (31214) Manufacture of macaroni,noodles and similar products

      15491 (31211) Manufacture of ice

      15492 (31212) Manufacture of coffee

      15493 (31213) Manufacture of tea

      15494 (31215) Manufacture of spices and curry powder

      15495(31190p) Manufacture of nut and nut product

      15496(31119p) Manufacture of sauces including flavouring extracts such as monosodium glumate

      15497 (31219p,31171p) Manufacture of snack: cracker/ chips (e.g prawn/fish crackers(keropok),potato/ banana/ topioca chips)

      15499(31219p) Manufacture of other food products

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155   Manufacture of beverages

      15530(31330) Manufacture of malt liquors and malt

      15541(31340p) Manufacture of soft drinks

      15542(31340p) Production of mineral products

Note: ( ) code under M.I.C. 1972

IPRs Protection Measure and Regional Differences in China

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Abstract

This paper studies the regional differences of intellectual property rights (IPRs), revealing IPRs protection's regional difference in China. By introducing "implementation effect" to adjust G-P Index, it can be realized that China's IPRs protection have been steadily improved, and there has been obvious and steady differences in IPRs. Developed districts have higher protection level of IPRs than the undeveloped districts. Some correlation analyses indicate that the protection level of IPRs has great correlation with the per capita GDP, and even a greater outward. China's economic unbalance determines regional differences in the protection of IPRs. However, having the poor correlation with R&D investment shows that IPRs protection doesn't influenced the technology improvement a lot. What's more, the positive function of IPRs will be hardly recognized in these undeveloped districts.

Keywords: Intellectual property rights (IPRs), Adjusted GPI, Regional differences, Implementation effect, Economic development

1. Introduction

Since the 1980s, the protection of intellectual property rights (IPRs) has been the negotiating focus between China and United States. U.S. complains that it's China's poor protection of IPRs that causes serious infringement (Note 1). To China, revealing the regional difference of the China's IPRs protection can not only help analyze the objective factors of China's protection of IPRs, but is also favorable for China government to nail down China's position in the negotiation between China and the United States. Economically, it's of great importance to reveal the function of the IPRs protection in China's economic development and technological innovation. It's also significant for the central and local government to formulate policies. However, the precondition to reveal the difference of intellectual property protection is to construct a more scientific and reasonable measuring method.

It's hard to quantify the level of each country's intellectual property protection (Maskus, 2000). It was until the 1990s that someone had made research in this realm. The earliest would be Rapp and Rozek (1990). Later, Ginarte and Park put forward a more integrated measurement on Rapp-Rozek's basis, which is now called G-P index. They categorize the index used to measure the level of protection into 5 sorts: (1) the coverage of the protection; (2) the member of international treaty;(3)the protection of forfeited rights; (4)enforcement; (5) the duration of protection. Each classification includes several measure indexes. Ginarte and Park regulate that each measure index accounts for 1score. The summation of each index's score divided by the number of indicators is the score of this category. The accumulation of the 5 categories is the level of quantized protection of intellectual property. However, such a method only evaluates whether a country has constituted the relative law of IPRs protection, without the consideration of its implementation effect. For some developed countries, these indexes are more effective in judging the law's implement effect. But it's not appropriate for some countries with unbalanced development in transition. In allusion to Ginarte-Park's method, Han Yuxiong and Li Huaizu put forth some improvement. But their improvement still hasn't considered China's regional unbalance in economic development and is difficult to analyze the regional difference in IPRs protection. Therefore, to judge the level of IPRs protection on Ginarte-Park Index's basis (hereinafter referred to as GPI), this paper induct the "implementation effect" to modify GPI. By modifying the index, this article measured the

IPRs protection of each province in 5 years, and discloses the obvious regional difference in China's IPRs protection.

The following text makes use of GPI to measure the IPRs protection. Then, inducting "implementation effect" can measure each province's protection level, analyzing the regional difference and relative factors in each area. And finally we can get the conclusion.

2. The measure of China's IPRs protection level: Ginart-Park

Since the 1980s, China's intellectual property law has experienced several momentous modifications. In 1985, China's patent law took effect and acceded to Paris Convention. Since the mid 1980s, the United States has promoted the link between IPRs protection and the international trade in the negotiation with Uruguay. The United States has exerted great pressure on many countries and regions about IPRs protection, such as Taiwan and Korea (Note 2). Meanwhile, China government has reinforced its legislation on IPRs. In 1992, China amended its Patent Law, bringing food, beverage, condiment, medicine and synthetics into the extent of the patent protection, (Before the Patent Law amended, and it only protected the method of producing synthetics rather than synthetics.) And also patent's duration has been extended from 15 years to 20 years. What's more, the procedure changed into dissent after authorized, which greatly cut down the time of applications for an authorized patent and strictly restricted the compulsory import of technique. A series of laws and statutes have been issued during this stage, as the Regulations on Computer Software, the Regulation on Executive Protection for the Agricultural Chemical Products, Implementation of the Regulations on the Administrative protection of Pharmaceuticals. The GPI Index has risen from 1.512 in 1991 to 2.857 in 1992. Before the accession to the WTO, China has perfected its laws to meet the standard of WTO, modifying its Patent Law for the second time. It also adds the prohibition of promising the power of sale augments the ban and the preservation of property before litigation and abolishes the Patent Reexamination Board's final decision for utility model or design. Besides, the Patent Cooperation Treaty and the Convention the protection of plant varieties have also been added, which made the GPI Index reach to 4.19. Therefore, from the perspective of law to follow, China has a perfect legal system on intellectual property protection at present.

Table 1 concludes the changes in the Intellectual Property Protection Index (IPP Index) according to GPI. From 1984 to 2001, each sub index and IPP Index have a step change (Years are discontinuous). Table 2 presents some countries' level of Intellectual Property Protection in Asia, Europe and the United States. According to China's IPP Index change, its Intellectual Property Protection had exceeded some developed countries. Until 2001, China has surpassed most developed and developing countries protection level in 1990(only 4.52 lower than the United States). This result is inconsistent with our intuition, which provides us foundation to revise index.

3. China's improved measure of Intellectual Property Protection: using implementation effect to modify GPI

According to Ginarte-Park's method, Han Yuxiong and Li Huaizu put forth some improvement. They believe that now China is in the transition period of development while the static rules like laws and statutes are progressing rapidly. Whereas, it needs a long time to put the static rules into effect in deed. Since the localization of Intellectual Property Law need an adaptive phase, there is an imprecise synchronism between legislation and justice. Further more, people can't change their ideas on Intellectual Property Protection overnight. In addition, empirical work shows there exists a great gap between the GPI in China and our intuition. so they construct the index of enforcement effect to modify GPI. Enforcement effect consisted of average of four sub-index Grande-2 indexes. The four Grande-2 indexes include as the proportion of lawyers to scale the degree of the social legalization, as the legislative time to measure the complete degree of the social legal system, as per-capita GDP to scale the level of economic development, as the member of WTO to measure the mechanisms of international society's checks and supervision. The essay insists that it's reasonable to use these four indexes to constitute enforcement regulation. But it seems inappropriate to distinguish each province's enforcement effect caused by different economic development. So we can bring forward the enforcement effect to modify the GPI on the basis of Han Yuxiong's improved thinking of GPI.

The specific measure of enforcement effect is reviewed from the next four aspects :(1) social legalization; (2) the government's attitude of enforcement; (3) facilities of relative services agency; (4) the consciousness of social intellectual property protection. The enforcement effect of the intellectual property protection system is indirectly reflected by the following indexes. Obviously, the index of enforcement effect differs greatly from the enforcement efforts. But our enforcement effect index can differentiate the level of intellectual property protection from each province.

The enforcement effect can affect the variable of intellectual property protection's actual effect. This is between 0 and 1. 0 indicates that the clauses of intellectual property protection haven't been put into effect. 1 indicates that the clauses have been put into effect perfectly. To assume $F(t)$ represents a country's enforcement effect at the time of t., $P^G(t)$ represents the level of intellectual property protection calculated by Ginarte-Park, so the modified level of intellectual property protection $P^A(t)$ can be expressed as follows:

$$P^A(t)=F(t)\times P^G(t)\ldots\ldots(1)$$

In form (1), $P^G(t)$ indicates the protection level the law stated, $F(t)$ represents the proportion of the protection level that has been actually carried out. (Note 3)

3.1 The degree of social legalization and it's measurement

The degree of social legalization is an important factor that affects the intellectual property law's actual effect. Here, the measurement is the same as Han Yuxiong's (2005). The proportion of layers is the index to measure the social legalization. When the lawyers' proportion is or over 5/10000, the proportion of layers is 1. When the lawyers' proportion is or less than 5/10000, the proportion of layers is equal to the actual proportion divided by 5/10000. (Note 4).

3.2 The attitude and measurement of the government's enforcement

The government's attitude towards enforcement is the key factor that influences the actual fulfillment of a country's legislation on IPRs. Because IPRs are not like other rights, IPRs themselves possess a strong public character. Therefore, it's hard to protect the rights by the rights themselves.

The system of IPRs protection accrues a government's charter, needing the government's affirmance of the rights. So does the modern society. The patent must be applied for, the trademark must be registered, and the copyright must be checked in. After the rights are granted, the dispute of rights' validity and sanction of infringement all can settled through the government's administrative measures. So the government's enforcement attitude is of paramount importance to a country's IPRs protection.

3.3 The facilities and measurement of relative service institution.

Through the investigation of United States' 100 international corporations, Mansfield (1994) found that these corporations were not only concerning whether the law for protection of a country's IPRs was strengthened, and whether the government enforced the laws strictly, they also emphasized the country should own enough social service agencies, such as the lawyers of intellectual property, patent agencies and so on. In terms of TRIPS, these proceedings cannot apply to national treatment (Note 5). That is to say, these proceedings should be transacted by the host country. Generally speaking, the host country stipulates that the foreign intellectual property items should accomplish through the agency. There are some relevant provisions in China's trademark law and patent law. So, whether a country owns advanced social service agencies applied with IPRs protection can greatly influence this country's level of intellectual property protection.

Many proceedings relevant with intellectual property are undertaken by law office. Forasmuch, this text chooses the index presents the proportion of the law offices that can handle the procedures of intellectual property to measure the social service agencies. The number of the law offices that can handle the procedures of intellectual property divided by the total offices is the result. If all the law offices can handle the procedures, the index is 1.

3.4 Awareness and measurement of intellectual property protection

Since intellectual property has the character of public, it's easy to infringe the intellectual property. If a country doesn't have a healthy social environment of respecting work, knowledge, competent people and creation, people have poor understanding of intellectual property, and the laws don't punish people well, the IPRs are defective even the country have a complete legal system, strict enforcement methods, abundant related social service agencies. Therefore, promoting public awareness of IPRs has long been the focus of relevant governments' efforts. The promotion of public awareness of IPRs includes: knowing what the IPRs is; realizing that pirating others' products of intellectual property is illegal as hooking others' property. In the strategy of IPRs, China proposes that we will bring about a general improvement in IPRs and initially form a cultural atmosphere of the whole society especially the market entities in 5 years. (Note 6) In the draft of strategy of IPRs, Jiang Su province had taken the aim of making 50% of inhabitants know what the IPRs is in 2004. (Note 7)

We use per capita patent applications as the index to protect IPRs. Because only when people's protection awareness of IPRs is heightened, they will believe that the justice system can protect their innovations. In the past, there are many scholars using this index to measure the technological level, which was not scientific. Application is the party's own judgment, while authorization really matches the conditions of IPRs. So we think patent applications rather than patent authorizations are more reasonable to measure people's awareness of IPRs. Considering China's actual conditions, we suppose that when ten thousand of people in one area own ten patent applications or more, the index value of per capita patent applications is 1; when ten thousand people own less than 10 patent applications, the index value equals to the actual amount of patent applications divided by 10.

On Ginarte-Park's method, this paper presumed the four indexes have the same contribution to implement effect. In this way, the score of implement effect is the average of the four indexes' sum scores divided by 4. According to the measurement of the four indexes, we calculate the implement effect of the national IPRs during 1984 to 2005 in view of the data's acquirability. Besides we also figure up the implement effect of administrative regions of China at the

provincial level during the period of 2001 to 2005. Thereunto, three indexes include proportion of lawyers, proportion of law offices, and per capita patent applications of the country's implement effect are calculated from the data of Statistics Yearbook of China. The data of proportion of lawyers and proportion of law offices, at the provincial level during the period of 2001 to 2005, are got from Judicial Statistics Yearbook of China, while the index of per capita patent applications is calculated from IPRs Yearbook of China. Rate of patent infringement disputes is from the official figures released by State Intellectual Property Office of China. Chart 1 displays changes of the GPI, implement effect, and Adjusted GPI index of China's level of IPRs protection throughout years. (Note 8)

The statistical data shows that there is but a minor fluctuation in the implement effect of IPRs. Meanwhile, the implement effect has gradually improved year after year, with a steady range of increase. After and before 1992 and 2001, there were two rapid rise periods, which was consistent with the fact that China had largely amended the laws of IPRs protection in 1992 and 2001. Compared with the IPRs protection in developed countries in form 2, since 2001, static index of China's intellectual property protection has exceeded most developed countries level in 1990. That is to say, China has quite complete law clauses of IPRs protection. However, the enforcement is comparatively poor. The enforcement was only 0.5215 in 2005 while the level of adjusted GPI was 2.1854, which was far behind the protection level in developed countries. China got behind in Asian ranked list. This reality accounts for why the United States government still brings a lawsuit to WTO against China for its poor protection of IPRs in 2007 (Note 9) So, strengthening the enforcement is China government's pivotal step to improve the IPRs protection at the present stage.

So which part on earth causes the poor enforcement effect? We can analyze the four variables that constitute enforcement effect. Hereinto, the average of proportion of lawyers to weigh the degree of social legalization is 0.132, with an annual average growth rate of 12.29%. The average of rate of patent infringement disputes to weigh the government's enforcement attitude is 0.835, with an annual average growth rate of 0.51%. The average of the proportion of law offices to weigh the relevant service institutions' equipment is 0.159, with an annual average growth rate of 6.92%; the average value of average per capita patent applications to measure the public awareness of social IPRs protection, with an annual average growth rate of 16.77%. We can find that in these four indexes only the rate of patent infringement disputes is much higher. The proportion of lawyers and the proportion of law offices are both very low, with a lower annual average growth rate. Although the average per capita patent applications has increased rapidly, the level of average value is still low. Therefore, the main reasons that cause poor enforcement effect are the lack of professional personnel and organizations and underdeveloped awareness of IPRs protection.

4. Regional Difference in China's IPRs protection level

Though a country has same static laws, the awareness of IPR protection is different for different provinces' economic development. Therefore, each province has distinct enforcement effect. In consideration of this, the author calculates each province's enforcement effect index of IPRs protection except Hong Kong, Macao and Taiwan. From the measurement, we can know that there is a great difference of protection level of IPRs in each area. To sort the average protection value of each province during 2001-2005 period, we can find that Beijing has the highest IPR index of 3.93 while Tibet Autonomous Region has lowest of 1.1503, with a discrepancy of more than 3 times. The 8 provinces that have much higher level are: Beijing of 3.9305, Shanghai of 3.4077, Tientsin of 2.3966, Guangdong of 1.9419, Zhejiang of 1.9111, Chongqing of 1.8559, Jiangsu of 1.7536, and Heilongjiang of 1.7431. Three municipalities have the highest protection level. And most of these provinces are in the east coastal regions.

Table 3 indicates the average value, standard deviation, and coefficient of variation of level of IPRs in China's 31 provinces during 2001-2005 periods. Average value used to indicate the central place that sample data relatively centralized in statistics. But its representativeness is influenced by the degree of each observation data's variation. Standard deviation and coefficient of variation are used to measure the degree of each observation data's variation, namely the difference of sample data. When making a comparison of two or more sample data's variation, we can directly utilize standard deviation if the unit of measurement is equal to average. If the unit is different from the average, we should use the ratio between the standard deviation and average to express it. The coefficient of variation can eliminate the different unit and average's influence towards the comparison between two or more variables' variation. The result in form 3 indicates that the average value has gradually increased during 2001-2005 period, which shows that the general level of IPRs has been improved with a stable rise. Then looking at the comparison of standard deviations, the deviations increased rapidly and steadily year after year, which increased from 0.505 in 2001 to 0.587in 2005. Because the average values change at the same time, and the coefficient of variation is in the scope of 0.304 to 0.320. So the regional difference in China's IPRs protection is relatively stable.

The regional difference of China's IPRs protection depends on the imbalance of China's economic development. By giving an overview of many literatures about strengthening IPRs, economic growth, and technology transformation, Falvey and Foster (2006) got the conclusion that equilibrium of IPRs protection is influenced by many factors. From the perspective of developed countries, Chen and Puttitanun (2005) developed a developing country theoretical model with two industries(advantage and disadvantage) and two firms (innovative and imitative) . They testified the relation

between equilibrium level of IPRs protection and per capita GDP, investment of innovation. Some scholars like Zhang Yabin, Wu Jiang, Yi Xian zhong (2007), Han Yuxiong, and Li Huaizu also make an analysis of the factors that influence the IPRs protection. This paper mainly makes a correlation analysis of the measurement of IPRs protection and per capita GDP in each area during 2001-2005 periods, and concludes an excellent correlation. The coefficient of correlation in 2001 was 0.8127, and reached to 0.9873 in 2005, with a tendency of rise. So we can infer that the imbalance in China's economic development is the key factor that affects regional difference of IPRs protection. Besides, economic openness is another important reason. But the relativity with technology R&D investment is relatively lower and fluctuating, which illustrates the imbalance of the regional development in developing countries like China will be one of dominants. As a result, the function of IPRs protection to technical innovation is not clear.

5. Conclusion

International GPI index never takes the factor of implement effect into consideration. Though Han Yuxiong, Li Huaizu (2005) propose some improvements considering the disadvantage of GPI, it's still hard to analyze and disclose the regional difference of China's economic development. By introducing implement effect to improve GPI, this paper aims to measure the improved GPI index of each province's IPRs, disclose the obvious regional difference in China's protection of IPRs. The 8 provinces that have much higher level are: Beijing, Shanghai, Tientsin, Guangdong, Zhejiang, Chongqing, Jiangsu, Heilongjiang, most of which are in the east coastal regions. Through the differentiate analysis, it can be indicated that the protection level of China's IPRs has steadily improved, and reflected that the variance of regional difference has been raised. Nevertheless, the coefficient variation is relatively stable. The relevant analyses indicate that the protection level of IPRs is related with the level of economic development, the openness of the market, and the local technology R&D investment. Per capita GDP is the vital factor that influences the regional difference of IPRs protection. The regional openness is another important factor, has a minor relevance with local technology R&D investment. So China's unbalance of developments in economic areas is the objective factor that causes the regional difference of the IPRs protection. What's more, the central government is unable to use the static laws to change the long-existing regional difference in short time.

By measuring the protection level of IPRs, this paper provides the elements to further analyze China's IPRs issues, which can help to disclose the regional difference and the objectivity of the protection level of IPRs, and can help to strengthen China's initiative in Sino-US' negotiation of IPRs protection.

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Notes

Note 1. On April 10th.2007,United States appealed to the WTO (DS362) aiming at China' s intellectual property rights and the market access of publication, See http://www.wto.org/english/tratop_e/dispu_e/cases_e/ds362_e.htm. The Chinese government expressed dissatisfaction, see http://news.xinhuanet.com/fortune/2007-04/10/content_5957643.htm. On September 19, 2007, the United States claimed to the Dispute Settlement Body of the WTO (DSB) to set up an expert panel, and China extremely regretted. See http://news.tom.com/2007-09-27/OI27/46462640.html. It's not until May 2008 that the experts panel's report has not been released.

Note 2. See Rod Falvey and Neil Foster: The Role of Intellectual Property Rights in Technology Transfer and Economic Growth: Theory and Evidence. Working Papers of UNIDO, Strategic Research and Economics Branch. 2006.

Note 3. The specific method to improve GPI is the same as Han Yuxiong's (2005)

Note 4. There are three usual methods used to ascertain the reference standard: (1), taking the country with the highest level as the standard (define the American value as 1), other values are adjusted according to the relative comparison. (2) Taking the province with the highest level as the standard (such as defining the Beijing value as 1). (3) Taking the developed countries and regions as the standard. This paper adopts the third way, defining the proportion of lawyers exceeded than 5/10000 as 1. According to the relevant data in Statistics Yearbook of China, and the Intellectual property rights Yearbook of China in 2002-2006 periods, the proportion of lawyers in Beijing has reached to 1 while Shanghai was 1 in 2005.

Note 5.TRIPS paragraph 2 of Article 3.

Note 6. See the outline of the national intellectual property rights. (in Chinese).

http://www.sipo.gov.cn/sipo2008/yw/2008/200806/t20080610_406106.html.

Note 7. See: http://www.czipo.gov.cn/ReadNews.asp?NewsID=664.

Note 8. For lack of space, the paper omits the specific datasheet of the GPI index, implement effect, and adjusted GPI index in China's protection of IPRs. If you need, please contact the author.

Note 9. The same to the note 1 see http://www.wto.org/english/tratop_e/dispu_e/cases_e/ds362_e.htm.

Table 1. China's Intellectual Property Protection Level based on G-P Index

Serial number	Factor	1984	1985	1992	1993	1999	2001
1	the coverage of the protection	0.43	0.43	0.86	0.86	0.86	0.86
2	member of international treaty	0	0.33	0.33	0.67	1	1
3	protection of forfeited rights	0	0	0.33	0.33	0.33	0.33
4	enforcement	0	0	0.33	0.33	0.33	1
5	duration of protection	0.75	0.75	1	1	1	1
	IPP Index(GPI)	**1.18**	**1.51**	**2.86**	**3.19**	**3.52**	**4.19**

Note: (1) For lack of space, the author omits all the second factors (sub index) and the years that have no change in table 1 on Han Yuxiong's paper (2005). (2) The specific scores are calculated from the relevant items on the IPRs Yearbook of Chinaduring 2000-2006 periods and the patent law that had been abolished (1984-1992 edition). Besides, December 31st will be the day of each index's marked standard day. (3) Based on the GPI method, we can get the IPP index by summing up the five items. So, the IPP index is equal to the GPI value.

Table 2. The Intellectual Property Protection Level (GPI) in some countries

	1960	1965	1970	1975	1980	1985	1990
USA	3.86	3.86	3.86	3.86	4.19	4.52	4.52
Canada	2.76	2.76	2.76	2.76	2.76	2.76	2.76
Germany	2.33	2.66	3.09	3.09	3.86	3.71	3.71
France	2.76	3.1	3.24	3.24	3.9	3.9	3.9
Italian	2.99	3.32	3.32	3.46	3.71	4.05	4.05
Japan	2.85	3.18	3.32	3.61	3.94	3.94	3.94
Korea	2.8	2.8	2.94	2.94	3.28	3.61	3.94
Singapore	2.37	2.37	2.37	2.37	2.57	2.57	2.57
India	1.85	1.85	1.42	1.62	1.62	1.62	1.48
Malaysia	2.37	2.37	2.37	2.37	2.57	2.9	2.37

Data sources: Ginarte J C, Park W G, Determinants of Patent Rights: A Cross-national Study, Research Policy. 1997.26. 283-301

Table 3. The analysis for differential index of each province's IPRs protection

Index	2001	2002	2003	2004	2005
Average value	1.5788	1.6872	1.7750	1.8335	1.9272
Standard deviation	0.5050	0.5280	0.5653	0.5794	0.5867
Coefficient of variation	0.3198	0.3130	0.3185	0.3160	0.3044

Note: calculated by excel.

Table 4. The correlation between the IPRs protection level and other related index

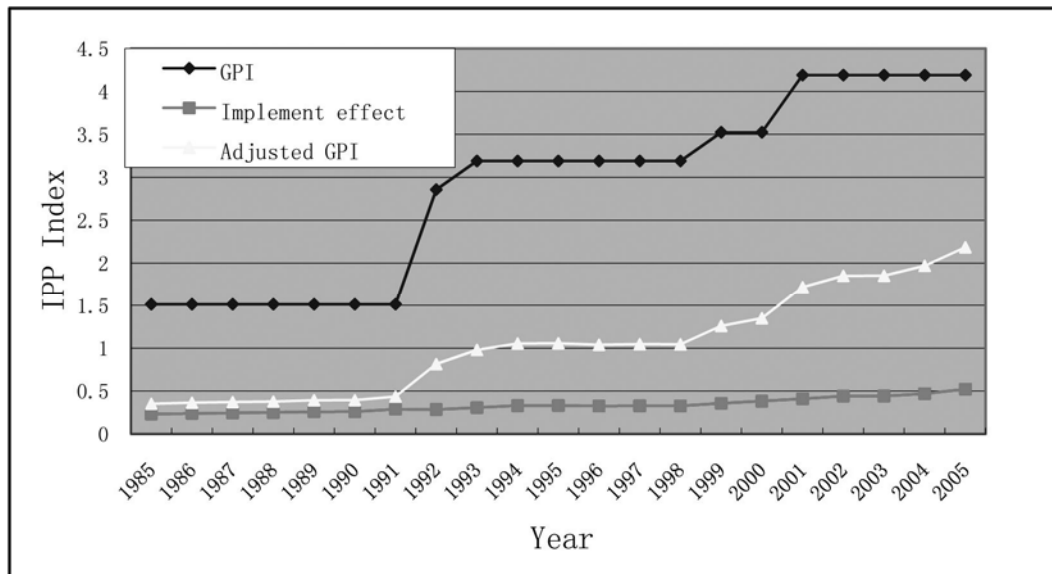| Year	2001	2002	2003	2004	2005
LN per capita GDP	0.8127	0.9817	0.9805	0.9830	0.9873
LN ratio of dependence on foreign trade	0.7188	0.7030	0.7185	0.6998	0.7027
LN R&D	0.4272	0.4769	0.4318	0.4709	0.4424

Note: calculated by excel.

Figure 1. Improvement of GPI and adjusted GPI and implement effect

Consumers' Reaction to Product Variety: Does Culture Matter?

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Abstract

Substantial cultural variations should be considered in establishing marketing strategies around the world. This paper stresses several aspects. Initially, consumers' perceptions of variety differ from the actual variety provided by a manufacturer or retailer. Literature indicates that consumers' benefits and costs of perceived variety differ systematically across cultures. Current cultural theory suggests that they also encounter greater cognitive and emotional costs than individuals in collectivistic cultures when ultimately choosing. The objective of this paper is to point out specific implications. First, theories on variety perception have been discussed in order to highlight consumers' benefits and costs of variety. Second, an attempt is made to find out whether culture-oriented market has facilitated the successful acceptance of product by the consumers around the world or not.

Keywords: Product variety, Cultural variation, Marketing strategy, Consumer reaction

1. Introduction

The question of standardization or adaptation is one of the core issues in international marketing. Multidomestic strategies have been compared to adaptive strategies with regard to the overall marketing mix (Zoe and Tamer 2002). In fact, advertising has received the most attention (Sirisagul 2000). Although some researchers claim that markets are homogenous and firms should consequently apply similar strategies across countries (Levitt 1983), the prevailing view seems to contradict this notion. Given the fierce competition in the domestic market, combined with increasing opportunities in many overseas markets, more and more local companies are going international. However, when the cultural backgrounds of each overseas market are substantially different, the acceptance of the product in the overseas market is highly challenged. Most researchers agree that cultural differences lead to different consumer responses across countries. Evidence indicates that cultures differ with regard to brand perceptions (Aker 2001), perceptions of risk and brand loyalty (Lehmann 1998), as well as effective advertising (Biswas 1992). Consequently, a certain degree of adaptation of marketing strategies is necessary for optimal overall value creation.

2. Objective of the study

The objective of this study is to find out whether cultural differences have significant impact on consumers' respond to product variation or not. From a managerial perspective, many companies are discovering that success depends on utilizing opportunities to meet the demands of customers. Marketers, in order to more effectively reach their target markets, must have an understanding of how intra-national cultures impact product-specific purchases by consumers.

3. Literature Review

Over the last several years, the body of literature that explores the complex relationship between culture and the acceptance of different products has grown exponentially. One of the lessons learned from studying social psychology is that cultural variations have significant impact on the way people view the world and that these views ultimately affect

their response to various products (Levav and Ariely 2000). Seemingly, there is agreement in the marketing literature that culture greatly influences the way consumers perceive and behave (Bettman, James and Park 2000). Huffman and Kahn (2000) show that the process of having both the marketer and consumer involved in learning about the consumer's preference can lead to higher satisfaction. The authors suggest that customers should be engaged in the process of formulating preferences on each of a product's attributes. That is, customers should first learn about the attributes and then determine their preference.

Overall, product variety has been of increasing interest to marketing researchers. Indeed, considerable effort has been invested in studying consumers' reactions to variety and optimal strategies for providing variety (Levav and Ariely 2000). The importance of variety lies in the fact that industries are becoming increasingly competitive. Deregulated, globalization and information easily accessible by consumers result in a growing need to meet consumers' preferences as closely as possible and equally important develop a long-term relationship with customers (Kahn 1998).

The increasing trend toward globalization of business activities provides a strong reason for understanding the cultural context of consumer behaviors (Gilovich and Medvec 2001). This trend has heightened the importance of understanding national cultural influences on the consumers' innovativeness and the diffusion of innovations. But this subject has been examined only to a limited extent.

The international marketing literature contains numerous studies concerning behavioral differences in consumers across cultures and nations (e.g. Kahn and Lehmann 2001); Huber 2000). Although these researches have made significant contributions toward understanding differences between nations, there appears to be a gap in the literature about sub-cultural differences within national boundaries, or intra-national differences (Anderson 2003). Concurrently, marketing practitioners have stressed that understanding culture is very important when attempting to market to new areas (Agarwal 2001). Despite the increased importance of cultural-related research in marketing, only a limited amount of attention has been given to ethnic sub-cultures (Gilovich, Wang and Regan 2003). An understanding of cultural differences is essential for greater success in comprehending and capitalizing on differences that exist within a nation.

However, there are intriguing findings such as those of Iyengar and Lepper (2003) which show that excessive choice can actually result in reduced instead of increased sales. To provide a sense of proportion, Drolet (2002) reports that when Procter & Gamble reduced the number of versions of their 'Head & Shoulders' shampoo from 26 to 15 they experienced an increase in sales of 10 percent. Considering the additional costs that arise from the complexity of manufacturing and marketing a variety of 26 products, it becomes quite clear that variety has substantial effects on a firm's performance.

4. Consumers' perceptions of variety

Sometime, it may happen that actual variety need not necessarily be equal to the variety perceived by consumers. For example, a car dealer may provide a wide range of automobiles with respect to vehicle style, engine type or color. Individual customers, on the other hand, may only be interested in a subset of vehicles, e.g. black, blue or silver station wagons with diesel engines. Alternatively, Chinese restaurants frequently offer a limited selection of various ingredients. When all possible combinations are listed, the variation among options seems greater than the actual variety. Obviously, the mere number of options represents a type of variety that is not ignored by consumers. A supermarket offering 15 different flavors of jam will offer customers more flexibility in terms of taste than a supermarket offering a limited selection of 6 flavors. However, consumers' perceptions are often exploited by contextual factors. For example, customers perceive that physically bigger shelf spaces have provided more variety than smaller ones even in cases when the actual number of distinct items is the same.

In addition, perceived variety is determined by the distinctiveness of options and the preferences of the consumers (Kahn and Lehmann 2001). For example, the introduction of a new computer monitor with a drastically increased screen size may extend the possible uses of the product (e.g. towards effective picture editing). An even larger increase in perceived variety results from alternatives that include new product attributes such as flat screen monitors that can be easily rotated to make different working tasks more efficient.

Furthermore, companies can actively increase perceived variety without having to produce entirely new product. Gilovich, Wang and Regan (2003) differentiate between adaptive and cosmetic customization. Examples of adaptive customization include office chairs that can be adapted to different physical characteristics of customers. Chinese restaurants also allow for a kind of adaptive customization by enabling customers to spice their meals according to their individual preferences. Cosmetically customized products allow for variation not with regard to the actual product usage but with regard to its appeal and look (Kahn 1998). Car manufacturers such as Volkswagen or Daimler Chrysler aim to offer customers additional benefits by providing limitless possibilities with regard to interior and exterior customization as they provide their cars in effectively any color customers wish to order.

5. Consumers' benefits of perceived variety

There are two distinct motives for consumers' respond to variety. First of all, there is the issue of constrained choice.

Behavioral decision theory views preferences as at least partially constructed in the light of the available options (Bettman, James and Park 2000). In most cases, consumers do not possess a clear set of preferences to make a purchase decision when approaching different options. These are about to be constructed when individuals start processing the information on individual options. Consequently, at the decision stage consumers are faced with a significant amount of uncertainty about which option best matches their future preferences. In the light of uncertainty about future preferences, consumers aim to maintain flexibility and consequently choose larger assortments.

Decision makers may realize that their chances of making an optimal choice are better when choosing between a larger numbers of options (Levav and Ariely 2000). With respect to the initial evaluation of choice, Iyengar and Lepper (2003) found significant cultural differences. The authors compared Japanese and American students on their desire for having choice. When both groups of students were asked to list occasions where they wished not to have a selection of alternatives available, 30 per cent of the American students replied, they always wished to have a choice. None of the Japanese students replied alike. Similarly, in their review of cultural psychological studies, Kim and Drolet (2003) conclude that not all participants are equally stimulated by choice opportunities. It seems that in collectivistic cultures such as the Japanese, smaller assortments may not be rejected as often as in individualistic cultures such as the one of the United States of America.

An important consumer benefit of variety is the ability to seek a diversity of options over time, i.e. variety seeking. Many consumer goods are bought in high frequency, consumers are familiar with the options being offered, and purchases are of relatively low risk. Under such circumstances, the ability to diversify consumption may be of particular value to consumers (Kahn 1998). Derived variety seeking occurs because shoppers may have multiple needs to satisfy, use products for multiple occasions or even buy products for multiple consumers. Direct variety seeking, on the other hand, occurs because of an internal desire for change or stimulation by novelty.

Derived variety seeking can be attributed to external constraints. If consumers find no product that satisfies all of their needs, consumers may naturally have to purchase multiple items. There is no reason to believe that such external reasons for variety seeking may vary systematically across cultures. However, this is not the case for direct variety seeking. Here, different consumer behavior across cultures is highly likely. The research of Levav andAriely (2000) has shown that interpersonal choice contexts lead Americans to make different choices than other individuals because this enables them to portray an image of uniqueness to their social environment. In the American culture, an image of imitation is perceived as a threat rather than an opportunity.

The link between behavioral change and uniqueness is not limited to variety seeking in group settings. For example, Drolet (2002) found that individuals who score high on a need for uniqueness scale seek to apply different choice strategies across a sequence of decisions. The author concludes that this happens because of consumer's desire for counter formality. While such a desire represents Western cultural systems very well, it does not fit with the cultural norms of many Asian countries. While in the American cultural context, individuals are encouraged to follow their own feelings, in many Asian countries being different has mainly negative associations (Kim and Drolet 2003).

Based on the identified cultural differences one might simply conclude that high variety assortments should be offered in individualistic cultures, whereas in collectivistic cultures competition would not be expected to focus on variety and, therefore, firms may offer fewer items.

6. Consumers' costs of perceived variety

Until the point where consumers need to compare individual alternatives and deliberate about which option to select, there are little costs associated with variety. Up to the product selection stage of the purchase decision variety will serve to attract consumers, especially those in Western cultures. However, when consumers need to evaluate each of the available alternatives and furthermore turn down options in order to make a purchase, variety brings about emotional and cognitive costs for the decision maker. However, decision tasks with a higher perceived variety include a larger number of acceptable options. It is operationalised by decomposing choice strategies into sets of components, such as reading information, comparing alternatives on attributes or computational tasks such as calculating the size of a difference (Agarwal 2001)).The effort of thinking depends both on the complexity of the task applied by the decision maker. At the very least, a larger number of acceptable options require a larger number of information accesses and comparison activities. If decision makers apply a more accurate decision making strategy and weight individual product attributes by their subjective importance, the effort increases further due to computational activities such as multiplications and subtractions. Consequently, perceived variety does not influence the cognitive effort of each consumer in the same way. The effect rather depends on the type of decision making strategy typically applied (Hofstede 2001).

It can be said that variety increases the responsibility of the decision maker for the outcome he selects. In an extreme case, where consumers only have one option to choose from, e.g. a regulated telephone monopoly, individuals may be dissatisfied with the service they receive but they are not responsible for their dissatisfaction. On the other hand, when

multiple service providers are available to choose from, the individuals themselves are responsible for paying higher fees or receiving inferior services as compared to other consumers.

However, there are several strong reasons that suggest that counterfactual thinking and feelings of regret are not independent of culture. Firstly, it is important to note that regret does not depend on satisfaction. Levitt (1983) has shown that regret can occur independent of whether or not an individual is satisfied with a selected outcome. To illustrate this, think about a consumer who has decided between two summer holiday destinations. Even though the location he finally chooses may have good weather, a nice hotel room and so forth, he may still question whether or not the competing destination would not have been a better choice. As such regret is always related to decision making. One of its sources for discomfort is the threat to an individual's self-conception as an able decision maker.

Iyengar and Lepper (2003) specifically concentrate on cultural differences with regard to post-decisional regret. The author asked participants from Japan, Russia, China and the United States to describe what they regretted most when looking back at their lives. Intercultural comparisons display no significant difference with regard to the tendency to regret inaction more than action over a long time period. However, it must be noted that Gilovich, Wang and Regan (2003) have shown that regret operates differently whether individuals look back at a recent choice or at a lifetime of decisions.

7. Findings of the study

Sometimes, consumers have taken their buying decision based on feelings and emotions. Also, sometimes, it happens that consumers like something but don't really know why, they just do. Many people enjoy running and many people enjoy marathons, but most would find it hard to explain why. Globalization is changing the way consumer goods companies conduct business. Many companies have found that globalization often offers significant economies of scale; producing, distributing, and promoting new products in multi-cultural markets, or even globally, can cost substantially less per customer than catering to individual culture.

Suppose that a consumer product company had enjoyed great success in Bangladesh with Product X. It decided to introduce Product X in several neighboring countries as well. Assuming that consumer acceptance of the product would be equally strong abroad, the company made plans to increase production and distribute Product X in local retail outlets. Six months after the launch in the new markets, combined sales were well under the projected goal. The product quickly lost the support of retailers and was pulled from the shelves. What went wrong? The answer may be that the culture of neighboring countries may not support the product. Consumers may not be satisfied with the product attributes. This failure may show that launching new products globally raises many new questions and issues. The product must meet a consumer need or provide a consumer benefit. But it is not easy for consumer package goods (CPG) companies to interpret the responses of consumers living in different cultures and countries around the globe. The business should evaluate its potential profitability before committing to the investment required for a full- scale market launch.

Of course, large companies operating in a single nation or even a single city don't standardize everything they make, sell, or do. They have product lines instead of a single product version, and multiple distribution channels. There are neighborhoods, local, regional, ethnic and institutional differences, even within metropolitan areas. But although companies customize products for particular market segments, they know that success in a world with homogenized demand requires a search for sales opportunities in similar segments across the globe in order to achieve the economies of scale necessary to compete.

Every year businesses spend millions of dollars researching, developing, and launching new products and services to consumers all over the world. Firms that maintain a higher-than-average revenue growth typically are engaged in continuous introduction of new products and/or operating and expanding internationally. The costly nature of research and development as well as the expense associated with launching new products result in a need for companies to better understand the cultural variations.

In particular, a person in one cultural context might make a choice in order to express individuality and appear unique. In this cultural context, choice is self-expression and a person can demonstrate his or her own unique blend of volition, feelings, and opinions through the act of choice. In this context, you are what you choose, and you can show who you are by what you choose: the hairstyle you choose to wear, the car you choose to drive, the person you choose to marry, and the presidential candidate for whom you choose to vote.

It can be said that a culture-oriented market leads to superior performance, at least in part, because of the new products that are developed and are brought to market. Also, a culture-oriented market enhances organizational innovativeness and new product success, both of which in turn improve organizational performance. Through the new product development activities, a culture-oriented market is converted into superior performance. One of the advantages of modern economy is that the marketplace can provide the consumer with an adequate choice of goods and services as well as the likelihood of satisfaction with that choice. In an ideal world, every product and service would be delivered flawless. However, sometimes products and services turn out not to be so perfect, necessitating the promotion of

consumers' rights to develop a consumer-oriented product.

8. Managerial implications

As cultural variations increase in size, marketers must develop knowledge of consumer characteristics and group-level preferences to more effectively deploy resources (both human and capital) to meet and exceed the growing needs of these markets. Different consumer needs and responses require different marketing tactics and in some circumstances, different marketing strategies altogether.

International marketers should be cautious about understanding cultural differences when developing marketing activities. Cultural differences in actual advertisements and their prompted reactions should be extensively examined. It can be said that offering a broad product line should be conducive to superior market share performance. At the same time, today's multinational companies are equipped with management techniques and technologies such as flexible manufacturing, the use of standardized components, as well as flexible supply chain management. The cost efficient production capacities for manufacturing a wide variety of items, and the demand for meeting the individual taste of each consumer has led many firms to provide excessive choice. As a result, regular supermarkets carry entire isles of cereals, potato chips or soft drinks.

9. Conclusion

With this paper we have intended to point out that substantial cultural differences are to be expected when variety is provided to consumers around the world. This is important, since the provision of variety is a key marketing instrument. Offering a high variety can extend visibility, drive competitors out of the market, enable companies to better understand the preferences of their customers, make use of economies of scope or simply capitalize on previous brand investments. Obviously, determining the right amount of variety to provide is no easy task even in single markets such as the United States. Since variety exerts a direct and immediate impact on sales, providing the right amount of choice in regional markets is a key challenge in international marketing.

Today, research on cross cultural differences regarding consumer reactions to variety is scarce. We have raised some important issues that deserve further attention. The first topic regards cultural differences in reaction to variety at the early stages of the purchase decision process where consumers have yet to decide for a single alternative. Obviously, having multiple options will be valuable in any cultural background.

It would be of great interest to replicate existing studies in Asian cultures that have been previously conducted in Western cultures. For example, it is most likely that variety seeking in group settings will substantially differ across cultures. Additionally, it is quite reasonable to assume that simultaneous and sequential decisions will yield little differences with regard to variety seeking in collectivistic cultures.

In our view, as we have outlined for the area of variety, research that tests cultural differences has a substantial potential to enhance our knowledge in the field of international marketing.

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Study on Operating Style of the Country Bank

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Abstract

Nowadays, the experimental country banks are in good conditions as a whole and they play an important role in promoting the construction of new socialized countryside, however there are some problems existing in operating .here try to provide some reference suggestion.

Keywords: Country bank, Country, Suggestion

In August 5, 2008, the Chinese bank supervision community officially issued the<the spread picture of country financial service in Chinese bank field >,it shows that with the steady promot of bank supervision community adjusting to relax the financial institution of the contry bank .A lot of country banks ,loan banks and finance mutual help community are born. The first six experimentalprovinces:QingHai,HuBei,JiLing,SiChuan,GanSu and Neimenggu set up 31 new countryside financial in town or under the town ,of which there are 19country banks,8financial mutual heipcommunities ,4 loan companies.By the end of the year 2007,the deposit receipts of the three-style country financial institution are 0.431 billion yuan and the loan receipts are 0.226 billion yuan .There are 219 small-scale country enterprises and 5483 families in country loaned.

Since May 1,2007,the first country bank was set up in the countryside of YiNangHui in SiChuan,the experimental new country financial institution has been exisited over a year.By the end of 2007,considering the drawback in DongFeng country of JiLing province,they earned over0.2 billion yuan,at the same time,the RuiXin country of GanShu earned about 1.01 million yuan,thus it became the largest scale and most effectively operating bank,while the HuiMing country of SiChuan suffered a slight lose.Seeing now, the whole condition is good,plays an important role in propel the construction of new socialized country.There are some successfull experience as well as the problems ,this text is trying to anylasis in order to develop the economy of the country and their banks to achive the double win .

1. The current predicament of rural finance and contributing factors

The problems currently faced by rural finance in China are the existence of serious financial constraints. These financial constraints are mainly centered on the official rural financial sector, with both shortage in thesupply of funds and insufficient demand for funds in this sector. However, the main issue is supply-relatedconstraints while that related to demand is less important.

1.1 The supply-related and demand-related constrains on rural finance

Currently, supply-related finance constraints in Chinese rural finance mainly reside in the insufficientnetwork of official financial institutions and in an insufficient supply of funds by these institutions.

The first is that the network of rural financial institution is inadequate. At present, although nominally theinstitutions providing financial services to the countryside include the ABC, the ADBC, RCCs, rural Post OfficeSavings and the PICC, those institutions which can in fact supply funds to the countryside are very limited. TheADBC acts as a policy bank and does not provide any loan to ordinary enterprises involved in agriculture orpeasant households. Rural Post Office Savings organizations only provide a savings service but no loans.Although the ABC provides loans for agriculture, most of which are for basic rural facilities and agriculturalproduct processing companies, with few loan for peasant households. Moreover, after the withdrawal from therural financial network over recent years by the Industrial and Commercial Bank, the Construction Bank and theBank of China, the ABC has not filled the gap. Therefore, millions of peasant households and tens of thousands ofrural enterprises can only apply for loans from RCCs. However, only about 40000 or RCCs are legal entities andthey do not form a financial network. It can be seen that there is a lack of financial institutions which can providecredit services, which is one of causes for the insufficiency in the supply of rural fund.

The second is the defects in rural financial system. Macroscopically, the mechanism of access, regulation, and withdrawal of rural financial market have not been well established, resulting in monopolization and, herein, lack of

competition on rural financial market. Microscopically, the ownership of rural financial institutions is notclarified, weakening the stimulating mechanism and restricting mechanism in management, and leading to thedisconnection of responsibility with profits, which have directly negative impact on the operational behavior of financial institutions.

The third is the defects in rural financial management system. Under the leadership of the United ProvincialCredit Cooperatives, rural credit cooperatives that used to scatter in countryside come into factual monopolization, which meets the demand for local economic and financial development. At present, United Provincial Credit Cooperatives basically follow the model prior to the reform in distributing administrative authority and responsibility among its subordinate credit cooperatives, while the power for decision-making in allocating creditsis more centralized than before.

1.2 The demand-related constrains on rural finance

The insufficient effective demand by peasant households for services offered by official financial institutions leads to the demand-related financial constraints. Currently, there is an insufficient demand for financing bypeasant households. On one hand, there is insufficient natural demand which is mainly determined by the lowdegree of rural commercialization, high farmer self-consumption of grain, oil, meat and vegetables and a limiteddegree of monetization which have reduced the commercial demand by peasant households for funds. On theother hand, stimulation of demand is insufficient and this is the main cause of demand-related financial constraints.In turn, this is the result of policy limiting the development of rural finance institutions.

Firstly, as the provision of consumer credit services by official institutions is lagging, the demand by peasanthouseholds for such credit is weak. Currently, it is difficult to activate the rural market in this respect, partly due tolow peasants' income. However, when peasants build houses, buy durable consumer goods, educate their children, or hold weddings or funerals, it is generally difficult for them to obtain loans from official financial institutions.This forces peasants to transfer the demand for consumer credit to unofficial financial institutions and, as a result,the demand for funds from official financial institutions is reduced.

Secondly, risks in agriculture and the low degree of rural mercerization have reduced investment demand bypeasant households. As natural disasters frequently occur in China and farm produce is perishable, the naturalrisks in agricultural production are high. But agricultural insurance is backward. At the same time, because of thelow degree of market development, the risks and costs for obtaining information and technology, as well as markettransactions costs, are high for peasant households. Due to such risks and a lack of correlative policy tools, themajority of peasant households can only choose to operate within traditional industries instead of entering intoother businesses, other than agriculture. This restricts their channels for investment and reduces their demand forborrowing capital from official financial institutions.

Thirdly, loans from official financial institutions are difficult to access which inhibits demand for investmentby peasant households. Investment loans from official financial institutions such as RCCs and the ABC aredifficult for peasant households, mainly because of the lack of collateral (for example, land use rights cannot bemortgaged), guarantees are difficult and formalities complex. Striking examples of this are the difficulties of obtaining loans by impoverished peasant families or by peasants living in backward areas, as well as by households with medium or high incomes for expanding their scale of production or adjusting their agricultural structure. Since the ABC has been transformed into a state-owned commercial bank, fewer and fewer loans have been extended to peasant households. The RCCs, the main official financial institution issuing loans to peasanthouseholds, find it difficult to meet the requirements of the majority who want loans.

2. The contribution the contry bank making to the country economy

2.1 the constructoion of the country bank does good to promoting the form of the new country financial competeton style, thus, forming the style of the coexisitence of country bank,agricultural developing bank ,agricultural bank,post saving bank ,country credit community and various informal financial institutions.There is no doubt that the country bank's enter promots the development of the country financial institution ,and add a financial channel which favors the policy of "three rural ",thus can make up for the blank caused by the business bank's moving away from the country areas ,besides,it can solve the problem that the state-owned business banks'inadequate support to three rural and middle or small enterprises based on the strict examination, complicated procedures and the high requirement ,and it's god for the better development of three rural ,and local economy.The foreign capital business banks' entering into the country financial markets enhances the competition press of the country credit community.Befor it ,the country community is the main resoursesof farmers'loan for the lack of country financial institutionahd it's monopolized state made it the leading gole.These so-called "foreigner"in the country financial market brings benign strick to it.In some areas, because of the increase of the country financial community,the country credit community begins to offer services initiatively.There is no doubt that this is a ood start considering the development and advancement of the country credit community.

2.2 The construction of the country bank provides a stage for innovation of the country finance.The innovation of country finance has beeb an important content of the financial reform all the time.It reflects as follows:first,it offers financial services initiatively to agricultural enterprises or private owners.The financial need for these enterprises or individuals has long been suplus.What's more, it mostly effects through the popular financing <informal financing>The occurance is no doubt to widen the financing channel,thus supply a certain financial ensurance for forming the formulated agricultural operation.Second, this can expand our country's consume credit need ,because of the large proportion of education,medicial treatment in farmers's life expenditure,the country bank can make certain exploration in this aspect and then promot the county consume credit market.Third, with the high development of nation's economy,the high income of the farmers ,the improvement of the life standard and some farmers own a sum of money on the move,the occurance of the bank can meet the most farmers'need.

2.3 The construction of foreign capital country bank---HuiFeng country bank is an effective measure of open train of thoughtof creating the new country finance.Some people in promised that ,this move is good for expanding the open field,optimizing the open structure,improving the open quality,making use of creatively foreign capital way,and deeping the country financial reform in the point of "open".the seventeenth meeting of the people' representives and centre economic meeting on the total strategy about system reform of the country finance thought highky of utilizing the nationaland international resources,actually leading the foregn capital financial institutionto take part in the experimental job of the new country financial institution,thus further promot the reform of country financial system,construct the modern country financial system of coexistence of various own system and operating reform,rational structure ,flawless function,effect and safety.

3. The operational state of rural finance in Japan

3.1The rural financial model in Japan

There are many self-generating farmer financial organizations early in the second in the 19th century and a nationwide of rural financial system until now in Japan. The rural financial system in Japan is composed of the government financial institutions, cooperative financial institutions and other financial organizations. The cooperative financial institutions mainly are peasant associate system, made up of the agricultural cooperative combination, the credit agricultural cooperative combination and the agriculture and forestry central treasury.

The agricultural cooperative combination is the grass-roots organization that directly has credit relations with peasant housholds. They process nonprofit services of deposits taking, loans, loans settling, insurance and marketing. The credit agricultural cooperative combination is middle-level organization that helps grass-roots peasant associate for funds management and plays bridge and tache roles between the grass-roots peasant associate and the agriculture and forestry central treasury. They provide services to grass-roots peasant associate that absorb their remaining funds and finance for grass-roots peasants associate in their hour of need, but not engaged in insurance, marketing, etc.

The agriculture and forestry central treasury is the central level organization that are on financing, dispensing and liquidation within the system of capitals and work capitals according to the national laws, as well as guide the work of the credit agricultural cooperative combination and provide consultation for them. The business scope of the agriculture and forestry central treasury is bigger than that of the agricultural cooperative combination, including the deposits, loans, business agent and foreign exchange. Its funds are mainly used for the agricultural cooperative combination, also loans to large enterprises associated. The agriculture and forestry central treasury also deals with funds transfer cycle, part of securities investment, except to provide services for the grassroots and intermediate institutions, issuing bonds on agriculture and forestry. The agriculture, forestry and fishery public treasury is the government financial institution. Its mission is to offer funds with low interest rates or long redemption date for those people who go for agriculture, forestry and fishery when they have difficulty in financing towards the agriculture and forestry central treasury and other financial institutions. The funds of the agriculture, forestry and fishery public treasury is mainly used to finance for infrastructure, such as land improvement, afforestation, the construction of fishing harbor such as fishing, also used for agricultural modernization, as well as for loans on agricultural modernization, improvements in agriculture, facilities that large domestic wholesale markets for agricultural products and trading markets are built. Its businesses generally are not directly handled, but   are entrusted to the peasants associate system agency, and pay a certain commitment fees. The agriculture, forestry and fishery public treasury is the supplementary of the peasant associate system and the commercial bank loans, as it were.

The agricultural credit guarantee and insurance system is also a measure that the government supports the rural finance. It is an important part of the agricultural credit compensation system in government finance. It comes into force according to the Agricultural Credit Guarantee and Insurance Law formulated by the Japanese government in 1961. The credit guarantee system is the rules and regulations that can reduce and avoid credit risks of credit givers to ensure credit discharge or obtain compensations when indebtedness cannot be cleared off. The agricultural credit funds association specializes in providing guarantee for the agricultural loans of its members. In credit insurance, the insurant is the creditor whose loss is compensated by the insurer because the debtor fails to fulfill obligations. The business of

the agricultural credit insurance association is mainly divided into two parts, guarantee insurance and finance insurance. The guarantee insurance can provide insurance for the items that the agricultural credit fund association pay the debts in lieu. The finance insurance can provide insurance for the items that the loans on agricultural modernization from the agriculture and forestry central treasury and the credit agricultural cooperative combination fell delinquent.

3.2 operation analysis on rural financial institutions in Japan

The rural financial institutions in Japan play an important role in the economic recovery since its establishment, especially after the second worldwar. However, since the 1990s, its disadvantages are also increasingly exposed with the development of agricultural modernization and rural finance.

3.2.1 Structural capital surplus

The rural financial institutions in Japan are facing a serious capital surplus because the farmer's income has a constant increase in every year, which make rural financial institutions absorb so many deposits, but rural capital demand is relatively limited with the improvement of agriculture modernization and productivity. For example, the survey around the problem of is found that the rural financial system provide loan value no less than 5.5 trillion yen for housing loans, its proportion of 47.1%, far more than the other the financial system include cities bank.

3.2.2 Compared with large financial institutions, the competitiveness of the agriculture and forestry financial institutions is weak due to ill electronized and informatized hardware equipment. It showed that financing cost is relative taller and business areas is relatively narrower.

3.2.3 The management lack of democracy and transparency

The funds of the agriculture and forestry financial institutions come from the deposits absorbed by the grass-roots collaborative combination. The cooperative collaborative combination association as intermediate level organization should announce and explain the use of vast funds to the grass-roots collaborative combination. However, the cooperative collaborative combination association provided such a large amount of funds that general members of collaborative combination knew nothing about it, even the director of collaborative combination knew nothing about to housing loans. The black-box operation in management make the problems cannot be found and solved early.

3.2.4 Ignorance of financial risk consciousness

It is mainly for two aspects. The first is the loan mortgage isn't examined necessarily Although a mortgage is required. The second is the capital is concentrated excessively lack of risk consciousness, such as the capital concentration on real estate.

3.2.5 Excessive intervention of the government

The government, the officials and business become one flesh. The government's intervention, support and guidance have played a positive role in financial development in the beginning (especially after the second worldwar). However, the government caused by excessive intervention resulted in the lack of transparency in the financial system and the weak of implementation effect of financial policy with the further development of the economy.

4. Problems out of operating the country bank in China

4.1 The fixed location in the market deviats from serving three rural and (Temporary management of village banks) shows that the country bank is a bank financial institution in country ,mainly offering services for local farmers,agriculuture and the development of country economy.The needof the local farmers'little credi hasn't been considered by the credit communityuntil now,which is the blank of the country finance,alse a biggest problem needed to be solved.While the country bank's ability in this aspect is weak,either,thusscan not fill up the blank..Apart of country banks'ignoring the "high risk,high cost,lowbenifit",but eyeing on the smallenterprise owners or export enterprises of nunerous loa.The devirats from the originalintention of constructing country bank to some degree.For example,ZhenDu country bank set up by HuiFeng differs from other country banks in its setting up directly in ShuiZhoudistrict.WangDongShang,the president of the board announced that,the loan receipts won't bo over 0.5 million yuan.According to his schedule,the later loan service in2008 will expand to reach farmers.

4.2 The credibility of country bank is weak. The law of the business bank shows that the loan issued by the country bank can not reach over 75%of the deposit.Without financial sources ,the loan business country bank can not srart .Some people in country bank introduced that their credit is weaker than other bank even country credit community ,thus it's difficult to attrat the deposit.The bank hold several meetings with the country people and introduce the people and products,however ,the villigers consider it as personal banks ,and dare not deposit.Taking another one for instance, in the Yi Long country where the YiLongHui Ming bank seats,which is the first country bank in our nation ,the namely proportion of the credit 8%,in fact it is over 15%,which is much higher than any other country bank or credit community.Unfortunately,farmersprefer   to   loan   from   association   while   country   banks   or   credit community .Therefore,the lack of money to loan in association while country banks loan little occurs.Besides,such

banks have only one net point without joing the bank union,it is inconvenient for villigers to deposit or withdraw.

4.3 The creativity is inadequate for lacking of the divided financial product.So far,the loan business in country bank is almost alike with community business.Because of the scale finance,the credit ability is far weaker than credit community ,thus,the existence of country bank is in question,forits function is almost the same with credit community.

5. Several suggestions on country bank's operating

5.1 Realise the identity of the country bank and its fixed locationclearly.There is a biggest policy context in constructing country bank ,that is carrying out the concept of scientifical development, constructing new socialized country.Construct the country bank properly under the leading thought of "industry feedbacks agriculture,city supports countryside,the wealthy support the poor,making the financial institution with advantage extend the credit support to country.Besides,provides farmers,agriculturesand country economy with more convenient ,more full,more effectivefinancial services by attracting and controlling, the country capital through stock system .Of course,it complies with main idea of the seventeenth meeting of the people's representetives and is a meaningfull as well as prolong strategic decision to make poor farmers to become rich ,improve low productivity and develop country economy much better and faster.Alynasing the condition of farmers objectively,we can divide them into three groups.The first one is those who are under poverty line with out enough farmland to support their lifes.The second one is those who are getting out of poverty by running private business.They large plants and have solve the basical problems of living.They are now becoming the active productivity in the country. The third are those who have been already rich.They run enterprises,shops,schoolsand any other beneficial businee.They have been ahead in developing the country economy.The main object to offered by country bank should be thhohse who are in the first two groups,especially help those in the first group enter the second or third one.If the country bank only supports the second or the third one,ignoring the first one,it only makes the country bank commercialized through robbing the high –quality credit resourcesof countryside.Thus it cann't solve the main problemsand derivate from the original intention of policy of constructing the new socialized country.The primary task of the country bank is to help poor farmers to get out of the poverty ,especially those who are poorest ang most need the help,or it can not be a real country bank.

5.2 Enforce the supervision.The difference between the fixed location in the market and political objective should be remedied in time,or it is passive once the experimental effects are already spread.This should be seen considering the balanced development of the country economy,further more ,the whole national benefits.Whaterever Corporate structure the country bank has taken,or where the business net point is seated,the fixed location should pay more attention to where to loan to.Financial supervision al department should set up corresponding asystem to assess annually and give suggestions for thei improvement or even ask thenm to get out of the financial market as to those who don not answer for the fixed location.Tthe construction and the run of the country bank are economic phenomena,but we should pay attention to its political contex and it concerns people's livehood.

5.3 Implementing certain proper benefical policy to promot the sustainable development of the country bank.Nowadays ,in a period of market economy,there are no investors or stock boards running completely political business.Their short-time investment ,the same as advertising,is to get much more return.To observe such market rule,we demand of perfecting corresondind laws on country bank and implementing proper beneficial policy,such as perfecting the manage construction ,derating tax and so on.Ia word,the country bank led by government should shoulder the social responsibility as well as enjoy supports from all wauks of the walks .Only in this way ,can it develop sustainablely and bring the worldwide effects into play,thus play an important role as lever and tache.

5.4 The innovation of product and service.It is vital for country bank to own wonderfully customerised products.There is no life without the wonderful produgt for those with low income in country.Coutry bank can actively explore in pursuing cooperation and enforce the connection with the varied governmental departments.Also,they should know well about the rules and decision on the main-developing products and cooperate well with the local financial organizations.Thus explore and develop correspong financial products aiming at varied need of farmers and small enterprises.Besides,city bank can rely on the city bank's financial experiment to design some financial products for some farmers'loan needs,as well as financial needs.On offering financial services ,country bank should be qualified as the bank in the fields,whidh makes farmers to feel it theirs.Farmer families are the equation of production and life.Country banks should take the advantage of the information to improve and innovate the service ability through combing the finance with production ,circulation and stock.

To country banks, there are three ways to strengthen the work of lowering the credit risk:Improve the symmetricial degree of information;innovate the style of assurance,finance and assure with the professional cooperation community.Coutry banks should really deep into the grass toots and masterand collect enough information of cosumers,thus lower the credit riasfor lack of the unknown of the consumers'information.What's more, it should seek and devdlop a new assurancing style.For some coutries, they adapt the style of mortagaging the business license of the taxi.For professional community menmbers,we gan ask the community to assure for them.

5.5 Relax restrict on the interes rate.Relaxing the restrict on rate is an important condition for country bank's steady development.Nowadays,the flattering extent of the country bank's credit interest rate is0.9-2.3 times of the norm rate.To the offers of the credit ,they care the benefit.Considering the factors such as distant,disperse of areas;the little amount and frequency of loan, to enable the commercialization of the rural financial feasible, 2.3 times the upper limit of the lending rate is still too low. To the needers, the most instrngent problem is the difficulty to loan rather than the high interes rate

5.6 Construct deposit safety system of the country bank, complet the competition and the development of country financial institution.We have no deposit safetr system now.Our nation has always deen bearing the unseen assurance,In the context of the gradually open financial market and the diverty of the own system and the property right ,it is no longer appropriate for nation to bear the unseen assurance. And it is necessary to build the deposit safetr system of country bank in experimental areas.There are three basical faltors to support financial safety net:deposit safety system,serious superviaon of financial institution and the function of the latest loaners in China Center Bank.They can strength the confidence of the depositors on country financial system and resist Domino effect by closing special financial institutions   .By using the system, supervision and recitifying in time of the those imperfect country financial institution ,as well as the better improvement of the country financial institution in case that it can only live but can not withdraw from the market.

6. Conclusions

In a word, in order to develop the country economy which applies to national situation and varied needs of country areas, it is unfeasible to adapt the system of "Across the board". On contrary, we need to open our mind and be brave enough to innovate and explore new ways as to creating new sustainable model to develop country economy,as well as build new country.It is a challege for the whole financial field.

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Do the Treasury Activities Function Well in Shari'ah-Compliant Financial Market?

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Abstract

This applied study was aimed at offering an insight into the understanding of the treasury activities of shari'ah compliant financial institutions in Islamic financial market. Archival studies on characteristics of the treasury instruments, observations and analysis on the mechanism of the instruments used in the markets were carried out in investigating any existence of shortcomings both in term of products as well as the dealing of transactions. Based on the findings of this study, contribution in term of suggestion for improvement as innovation was recommended. It was hoped to improve the current practices in handling the instruments and the mechanism in the market

Qualitative methods of research and exploratory approach were used in this study. Observation to research method and interviews were also employed in this study. They were applicable in looking into the research issues understudied. Additionally, descriptive study approach was also applied in this study. Capitalizing on the explored and examined shortcomings became the basis in suggesting action to be taken to improve the policies and procedures by the relevant institutions.

Keywords: Shari'ah-compliant, Mechanism, Islamic inter-bank money market, Excess funds and debt trading.

1. Introduction

Treasury activities are crucial roles of financial and banking businesses in any financial market, which primarily responsible in managing the bank's funds. Financial market is composed of money market and capital market. Money market is a dealer market for short term debt securities whilst, capital market is for long-term debt and equity shares [Ross, Westerfield, Jaffe and Jordan, 2008]. Basically, the treasury's function of an Islamic financial institution is to essentially managing two types of funds namely the depositors' funds and the shareholders funds. The eligible liabilities of an Islamic banking institution are represented by the customers' deposits which composed of current account deposit, saving account deposit, general or unrestricted investment deposit and special or restricted investment deposit. The shareholders funds are comprised of paid-up capital, share premium, general reserve and retained earning [Mohd Nasir bin Mohd Yatim & Amirul Hafiz bin Mohd Nasir, 2008].

These sources of funds are utilized in various investments and financing activities. The excess from such utilization will be commingled, pooled and managed by the treasury division of an Islamic financial institution in compliance with the principle of fairness to mankind and in conformance with the requirements of shari'ah dictates [Mohd Nasir bin Mohd Yatim & Amirul Hafiz bin Mohd Nasir, 2008]. In brief, one can conclude that the functions of treasury department of an Islamic banking institution can be enumerated as maintenance of statutory reserve and liquidity requirement, management of clearing account with central bank and management of institution's excess funds.

2. Archival study

All financial institutions, including merchant banks and finance companies are required to maintain a small percentage of their eligible liabilities with a central bank in the form of statutory reserve and liquidity requirement based on stipulated rates which are subject to review from time to time depending on economic condition of the nation. The eligible liabilities are comprised of customers' funds in current accounts, saving accounts, investment accounts, amount due to the bank and amount due from other banks, merchant banks and finance companies. As such, in line with the bank's conceptual approach in profitability accounting, the account department of a branch bank is therefore be required to maintain a certain percentage of the branch's eligible liabilities equivalent to the amount required by the central bank as its statutory reserve . In addition the central bank requires such institution to maintain on daily basis, minimum liquid assets to meet the customers' demand. The central bank may from time to time notify the banks the percentage of liquid

assets that need to be maintained. The liquidity assets of a shari'ah-compliant financial institution comprise of notes and coins which are legal tender, balance with central bank excluding balance in statutory reserve account, Government Investment Certificate (GIC), Islamic Accepted Bills (IAB), banker's acceptance (BA) and other approved assets. In dealing with the Islamic treasury functions and the transactions involve within a shari'ah-compliant financial market, the primary shari'ah concept namely al-bai' al-dayn was often used. Al-bai al-dayn concept refers to debt trading or an exchange of debt with cash as its consideration, computed at a discounting basis [Mohd Nasir bin Mohd Yatim and Amirul Hafiz bin Mohd Nasir, 2008].

3. Methodology

This study emphasized on qualitative research method and exploratory research approach. Both are considered appropriate for this study. In addition analytical and comparative discussions were also applied where appropriate. Archives in the form of documentation were scrutinized in detail. This was done to ensure coverage on the focus of the issue under-studied. These were therefore being the justification on the holistic nature of the issue being focused and thus achieving the objective of this study. Observation of field study was also under-taken in validating the findings of this study. In achieving the objective of offering an insight in this study, treasury instruments features were scrutinized in ensuring their conformance with the tenets of the principles rendered in the creation of the related instruments as well as their dealing transactions in the shari'ah-compliant financial markets.

4. Discussion

The management of Islamic banking clearing account falls under the Islamic Inter-bank Money Market (IIMM) which was introduced by the central bank. The market is comprised of mudharabah inter-bank investment and Islamic inter-bank settlement cheque clearing system. The participants of this market are licensed Islamic banking institutions. The basic instrument in use is mudharabah inter-bank investment (MII). MII refers to a system whereby an Islamic bank could obtain investment from another Islamic bank under the principle of mudharabah. Its features include, the tenure of investment is from overnight to twelve months with stipulated minimum investment amount. The rate of return is computed based on the gross profit rate before distribution for one year investments of a receiving bank. The effective rate of return shall be the rate of gross profit declared on the maturity date of each investment. Further, the profit sharing ratio on all period of investment is negotiable.

MII is considered as special investment deposit known as Mudharabah Investment Deposit (MID) to a receiving bank. It forms part of the eligible liabilities of that bank and thus be subject to statutory reserve and liquidity requirements. On the other hand, to the provider of fund, MII is considered as amount due from other bank and thus be deducted from eligible liabilities for the purpose of computation of statutory reserve and liquidity requirements. The computation of the gross profit rate before distribution of one year investment of the receiving institution shall include MII. Therefore, MID is included in the profit distribution system together with listing of other deposits.

Another available mechanism is known as Islamic inter-bank cheques clearing settlement system (IICCS). It is a system whereby a central bank shall allocate and square the position of surplus and deficit balance of the related financial institutions at the mid-night clearing settlement. The features of IICCS are firstly, an Islamic bank is required to maintain a clearing account with a central bank under the principle of al-wadi'ah yad dhamanah (trustee custodian with guarantee). Any surplus fund of an Islamic bank at midnight clearing shall be automatically invested with the deficit bank using MII for an overnight or a day as investment. The surplus fund shall be distributed to the deficit banks proportionately. The amount of investment for the largest surplus bank shall be first invested with the bank with the largest deficit and any remaining balance to the next largest deficit bank and so on. Where the total surplus is less than the total deficit, the entire surplus of each bank shall be invested on the principle that the bank with the largest surplus shall first be invested with the bank with the largest deficit. The shortfall shall than be covered by the central bank.

The profit sharing ratio is fixed at a certain ratio such as 80:20 for which 80% is for the provider of fund. The investment by the bank and the profit earned shall be automatically repaid on the next working day through a debit against the clearing account with the central bank. An Islamic bank is to inform the central bank in writing on the effective rate of gross profit before distribution for investment of one year. In managing the bank's excess fund, treasury department of an Islamic bank shall be responsible in managing a pool of commingled excess funds comprises of excess customers' deposits, investment funds and shareholders' funds after being utilized for statutory reserve and liquidity requirements and various financing activities undertaken by such bank. Such excess fund is normally being invested in various short term investment avenues which include Government Investment Certificate (GIC).

The investment in GIC constitutes a benevolent loan to the government under the principle of al-Qard al-Hassan which is free from any element of usury. Nevertheless, the banker for government, Central Bank, at its own discretion, could provide hibah as gift for the good deed of offering funding to government. Such hibah is paid on the anniversary date of the GIC and it is computed based on average cost method. Since the GIC was created based on Qardhul Hassan principle, it cannot be traded in the secondary market as it is a good loan based underlying instrument. An investment in

GIC is also considered as a form of liquid asset. As such, it was concluded that GIC is a form of accommodative instrument in order to realize the operational practice of an Islamic banking at its initial stage and for that reason such instrument has been phased out from the Islamic financial market. In world-wide practices, investment of excess fund of an Islamic financial institution with another Islamic bank usually is arranged on the basis of Mudharabah Inter-bank Investment (MII). The return on MII is determined by the period of investment and the receiving bank's gross rate of profit of one-year investment.

In addition an Islamic bank may venture into a short term financing under the principle of murabahah (cost-plus marked up). By rendering this principle, a bank can provide fund for purchasing of certain tangible permissible commodity. In this regard, the purchaser is appointed as the bank's agent and thus is known as the purchase orderer for purchasing of the intended commodity. Upon settlement of the commodity, the bank subsequently sells the commodity to the purchase orderer at a marked-up value and allows him to defer the payment. In this way, a debt is created and thus enabling it to be traded based on the principle of al-bai' al-dayn in shari'ah-compliant financial market. In ensuring its shari'ah-compliant such debt must be originated from shari'ah permissible trade transaction such as arising from above-discussed cost-plus-marked-up sale and deferred payment sale. Currently, there are several debts instruments available in Islamic capital market which includes Islamic accepted bill (IAB), Permissible Bankers' Acceptances (Green BA) and Mudharabah Bond (MB). IAB is a bill of exchange drawn by an Islamic bank and accepted by the importer or purchaser of an underlying permissible trade transaction. For instance, an IAB originated from import or domestic purchase transaction. The pricing of an exchange in debt is computed on a discounting basis. Green BA are those issued by conventional banks that complied with the requirement of related tenets of the principles in use such as permissible export or sale transaction or drawn to finance permissible goods or commodities.

Mudharabah bonds are bonds issued under the principle of mudharabah. The bonds are originated from Islamic house financing under the principle of al-bai' bithaman ajil. This instrument allows the bondholders and the issuer to share on specified ratio of profits generated from the issuer's operation in purchasing the Islamic house financing assets and other Islamic investment. Based on the concept of mudharabah, the bondholders shall however, entirely bear any loss of diminution, if any, in the principal amount of the bonds. Investment in foreign currencies includes dealing in bullion transactions and foreign exchange transactions. Dealing in bullion transaction operation entails spot purchase of commodity of gold or silver for forward sale / delivery. By such dealing, income can be earned in two forms namely the appreciating value of commodity and resulted from swap exchange. The exchange of one currency against another through a price of a prevailing rate is allowed by shari'ah under the principle of al-sarf and be exchanged between the two difference currencies on a concurrent basis.

5. Conclusion

The proper and orderly operation of treasury's function of an Islamic financial institution within a shari'ah-compliant financial market is to essentially managing two types of funds namely the depositors' funds and the shareholders funds. . In achieving the objective of offering an insight in this study, treasury instruments features were scrutinized in ensuring their conformance with the tenets of the principles rendered in the creation of the related instruments as well as their dealing transactions in the shari'ah-compliant financial markets. The management of Islamic banking clearing account falls under the IIMM which was introduced by the central bank. The market is comprised of MII and IICCS. An IICCS is a system whereby a central bank shall allocate and square the position of surplus and deficit balance of the related financial institutions on an over nightly basis.

A debt is probable to be traded in Islamic financial market. The basis of its dealing is using the principle of al-bai' al-dayn. However, in ensuring its shari'ah-compliant such debt shall be originated from shari'ah permissible trade transaction such as arising from cost-plus-marked-up sale and deferred payment sale. There are several debts instruments available in Islamic financial market. Such available instruments include IAB, Green BA, and Mudharabah Bonds. The exchange of one currency against another at a prevailing price or rate is probable under the principle of al-sarf provided the exchange between the two difference currencies is made on concurrent basis. Therefore, in concluding on the wellness of the shari'ah-compliant financial markets, the writer viewed that the available instruments and the mechanism of their operations are competitive, efficient and effective in their nature.

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On Perfecting the Credit Guarantee System of China's

Small & Medium-Sized Enterprises

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Abstract

The poor credit and short of funds turn into main factors disturbing SMEs development. In order to solve SMEs' financing issue, to set up perfect credit guarantee tends to be more important. Therefore, it is necessary to build and perfect a legal regulation system for SMEs' credit guaranty, making best use of the government's effects on SMEs' credit guarantee system, perfecting SMEs' credit guarantee market mode, and constructing a scientific operation mechanism for the credit guarantee institution.

Keywords: Small and medium-sized enterprises (SMEs), Credit guarantee, Guarantee institution

SMEs have already become an important power for driving economic growth, creating employment, and promoting technological innovation, playing a vital role in social resource allocation. However, SMEs' poor credit and short of funds turn into main factors disturbing the development. In a financial market with information asymmetry, the guarantee system is important since it benefits the decrease of market risks and drives market development. In order to overcome the difficulty in financing for SMEs, to set up a perfect credit guarantee system tends to be extremely important.

1. Set up and perfect SMEs' credit guarantee legal regulation system

1.1 Constitute the law of SMEs' credit guaranty

In the world, the country that emphasizes on SMEs development has the special SMEs credit guarantee law, such as Korea's Law of Credit Guarantee Fund, Japan's Law of SMEs Credit Insurance Public Base and Law of SMEs Credit Guarantee commission, America's Law of SMEs Investment, and Canada's Law of Small Enterprise Loan. These special laws serve as the "constitution" in the SMEs credit guaranty legal system in a country. Considering the important effect of SMEs in national economic development, it is necessary to set up an administrative regulation that follows the Law of the Peoples Republic of China on Promotion of Small and Medium-sized Enterprises, taking it as the special law for SMEs credit guaranty, which can adjust the rights and obligations of SMEs credit guarantee institutions and SMEs, coordinative banks and governments.

1.2 Issue assistant laws and regulations on credit guaranty

According to the world experiences and China's practices, SMEs credit guaranty is merely one part of the whole credit guarantee system. Its effectiveness depends on related sectors, such as equipped laws, coordinative banks and enterprises. Here, relevant legislation is a basic pre-condition. To issue equipped laws concerning credit guaranty, such as Law of SMEs Credit Loan, and Law of Anti-Monopoly, can help to confirm financial institutions' obligations and responsibilities in guarantee business. As a matter of fact, the nature of SMEs credit guarantee institutions emphasizes on the support for SMEs. These institutions are higher risks and lower return. In operation, they are non-profitable. Therefore, the government should solve the funds collection and compensation issue together with strengthen of market regulation and prevention of risks, for SMEs credit guaranty by legislation. Meanwhile, the government must enhance the legislation in financing, technological consulting, and talents training, which are necessary for SMEs development and serve as a guaranty for realizing a profitable capitals circle and a sustainable operation of SMEs, credit guarantee institutions, and financial institutions. Besides, constitute relevant laws and regulations concerning social credit system, such as Law of Fair Use of Information, Regulations on Financial Bonds Management, and Standards for Punishing Behaviors of Escaping Banks Debts.

2. Make best use of government's effects in SMEs credit guarantee system

2.1 Exert government's dominating effect

The guarantee operation differs from insurance business. Insurance knows the probability of risks and losses by precise calculations and statistical methods. Then, it determines its costs and profits. Guarantee enterprises are different. Because guarantee items have different sums and terms, and it is hard to estimate the execution of anti-guarantee measures, together with the high separation, rate of premium can not be calculated precisely. Therefore, the guarantee operation faces higher risks. The government shoulders irreplaceable responsibilities in constituting SMEs credit guarantee system. And for a long period, the government will stay in a core and dominating position, which could not be replaced by the self-developed market mechanism. To make best use of government's dominating effect, it concerns not only funds supply, offering capitals for the foundation of guarantee institutions, but also providing necessary directions and management in fields of choosing the proper macro mode for credit guarantee system, perfecting the game rules in guarantee market, training and introducing high and medium-grade guarantee talents, directing SMEs regulating the development. Only by this way, can it form a positive platform that is right for the existence and healthy development of credit guarantee system.

2.2 Regulate government behavior in developing SMEs credit guarantee system

For present guarantee system, the guarantee institutions with government funds have advantages of capitals. As a result, in their operations, words of officials at different levels are decisive in managing and operating guarantee funds. This governance structure leads to irrational administrative interference, which may cause problems in the safe, stable, and effective operation of funds. Therefore, under present system, the effective way is to adopt a commission management for guarantee funds. It has two advantages: firstly, it can avoid government direct interference, realizing a complete market operation; secondly, make a full effective use of professionals, reducing guarantee mistakes. The commission management can improve the guarantee quality on one hand. On the other hand, it can coordinate interests among different parts. In a commission management, it is necessary to prevent the government from interfering decisions, causing guarantee mistakes, and forbid specialized institutions to merely pursue self interests, causing "inner people control" issue and a series of problems.

3. Perfect SMEs credit guarantee market mode

3.1 Perfect the "one-body, two-wing, and four-level" mode

By learning from foreign experiences in supporting SMEs, China sets up a Chinese characterized "one-body, two-wring, and four-level" SMEs credit guarantee system mode gradually, after years of exploration. "One-body" means taking the policy guaranty as the subject, applying "diversified funds, market operation, corporate management, and performance support". "Two-wring" means taking commercial guaranty and private mutual assistant guaranty as necessary complements. "Four-level" means the guarantee institutions at four levels, namely the central government, the province, the city, and the county. The policy guarantee institutions possess a dominating status in China's present guarantee system, which supply policy support for government supporting SMEs development indirectly. As non-financial institutions, they are not engaged in financial operations and fiscal credit. They aim at profits by no means. What they serve are not all SMEs but those have a bright future and follow state industrial policies and can not getting loans from commercial banks. What they serve are mostly state-holding or state-participating enterprises or organizations. Commercial guarantee institutions are mostly founded by enterprises or individuals, which adopt commercial operations and pursue for profits. Offering credit guaranty for SMEs is only one business. The mutual assistant guarantee institutions are formed by SMEs, which are not long for profits and aim at solving SMEs difficulties in loans, being non-financial institutions. Most are social parties or enterprises. The government should support the development of private commercial guarantee institutions and mutual assistant guarantee institutions which grow from internal enterprises, especially in the process of private enterprise development. These two kinds of guarantee institutions evolve from market by themselves. Their operations are featured with market characteristics. They can exert the guarantee function completely. Therefore, the government should release the restricts on the internal financial innovation of private economy, protect the internal financing base of private economy, training financial media institutions for private economy, and helping private economy get necessary financial support internally.

3.2 Build re-guarantees institutions

Under present fiscal and taxation system, to adopt a re-guarantee mode can help to exert effects of finance at all levels. In the world, Japan's SMEs credit guarantee system is a typical re-guarantee mode. The central financial public base offers re-guaranty for local SMEs credit guarantee commissions. The task of re-guaranty is not to audit each loan but set up the operational rules for SMEs credit guarantee system. Local guarantee institutions follow the general guarantee rules. Provincial re-guarantee institutions serve local SMEs credit guarantee institutions and are engaged in common re-guarantee operations and compulsory re-guarantee operations. Besides, they cooperate with the Central Bank and financial sectors to regulate and supervise the local SMEs credit guarantee institutions. Form national re-guarantee institution as the "final guaranty". In order to defend risks, the counties (cities) with large economic amount can set up

branches of SMEs credit guarantee institutions. They do not form independent credit guarantee institutions. As for guarantee institutions and re-guarantee institutions, the former takes main risks and the later all risks. They should sign contracts for risks proportions. For projects with higher risks, it is necessary to realize compulsory re-guaranty.

4. Constitute a scientific operation mechanism for credit guarantee institutions

4.1 Implement the regulated membership system

Urban SMEs credit guarantee institutions can adopt qualified SMEs as members. In order to coordinate with banks effectively in operations, they can audit the qualification of members together. Provincial SMEs re-guarantee institutions can adopt urban SMEs credit guarantee institutions (include policy, mutual assistant, and commercial SMEs credit guarantee institutions) and enterprises as members. As applying loans, with same conditions, members can enjoy the priorities.

4.2 Regulate the use of guarantee funds

The special nature of guarantee business determines it is not an industry with sudden and huge profits. However, in order to survive and gain further development, the industry must form value compensation and value added mechanism. As policy guarantee institutions, although they are not for profits, they should be profitable more or less. That is the basic requirements of market economy. As for commercial guarantee institutions, the chief target is to pursue profits. So, the reasonable use of guarantee funds is an inevitable issue. At present, relevant management rules regulate that guarantee funds must save in banks or buy state debts. However, due to the lower rates, it is hard to realize value growth for these capitals. Therefore, many guarantee institutions quietly or indirectly invest their funds in capital market. Considering the fact of guarantee institutions operating funds in capital market, it is a wise policy that permits guarantee institutions to follow a reasonable investment combination, improving funds' safety and values. Surely, local government should not directly regulate the use of guarantee funds. What's more important is to cultivate professional talents who know capitals operation. Once policy permits, they can operate guarantee funds reasonably.

4.3 Form and perfect a capital compensation mechanism for guarantee funds

Presently, China has policy guarantee institutions and commercial guarantee institutions. Set up different compensation mechanisms for different credit guarantee institutions.

(1) Offer fiscal compensation for policy guarantee institutions, or determine the sum of fiscal compensation according to certain proportion. Facing compensation loss, firstly use the risks reserve funds and then the fiscal funds. For the government-funded guarantee institutions, the long-term task is to support the development of SMEs. The government can also take part of taxes from SMEs as compensation for guaranty, driving SMEs development by their own strengths. "Matters from people are used for people."

(2) For commercial guarantee institutions, the government should reduce or exempt business taxes and take out special funds as risks compensation for commercial institutions and private mutual assistant guarantee institutions. According to guarantee institutions' performances, the government can choose some as compensation objects, regulating the standards for compensation. Specific standards are determined by provincial or city governments.

4.4 Form risks guarantee funds and re-guarantee funds system

To defend, control, separate, and resolve risks, and the risk compensation mechanism are important rings for the normal operation of guarantee institutions. China is a developing country. SMEs face more risks in development. The risks compensation funds of guarantee institutions are far from sufficient. The government should, or together with banks and enterprises, sets up risks guarantee funds and re-guarantee funds, for the sake of supporting SMEs development and insuring the normal operation and development of guarantee institutions. In this aspect, experiences from Taiwan are valuable. In Taiwan, SMEs credit guarantee funds serve as guaranties for SMEs. SMEs credit guarantee funds are non-profitable financial organizations. All qualified SMEs can get services from these organizations. The functions of credit guarantee funds include: execute the government's policy of supporting SMEs; exclude barriers in front of SMEs in applying for loans; improving the wills of financial institutions serving for SMEs; helping to enlarge the assisting effect of relevant assistant institutions.

4.5 Build a scientific guarantee risks internally-control mechanism

SMEs credit guarantee institutions should construct a scientific guarantee risks internally-control mechanism, defending the reverse selection and moral risks.

(1) Build risks conservation system. It is widely accepted that credit guarantee industry faces high risks. It is necessary to take strict measures to identify, defend, control, and separate risks, controlling risks under an acceptable standard. The guarantee institutions should build the risks reserve funds system, withdrawing reserve funds and using for compensations according to certain percentage along with the business development. Withdraw reserve funds according to 1% of surplus in current year and certain percentage of after-tax profits. As the risks reserve funds are above 30% of registered capitals, the excessive part can be taken as capitals.

(2) Set up a risk-sharing mechanism. The core of credit guaranty relies in guarantee institutions' strong ability of defending risks. They can realize the upgrade of credits and enlarge the credit. At present in China, there is no positive "interests and risks-sharing" cooperation between guarantee institutions and commercial banks. In order to escape from risks, most commercial banks provide lower credit line for guarantee institutions. Some even ask guarantee institutions to mortgage all assets. Foreign guarantee institutions can offer five or twelve times of self capitals as loans, while in China the number is only two times. Learning from foreign experiences, China should adopt a risks-sharing mode in which all partners share risks. Firstly, guarantee institutions and SMEs sign contracts about the percentage of duties; secondly, guarantee institutions and commercial banks follow the "interests and risks-sharing" principle. The guarantee percentage should be controlled between 70% and 80%; thirdly, as compensations for debts happen, guarantee institutions and re-guarantee institutions share the compensations according the percentage between 30% and 70%.

(3) Set up an anti-guarantee mechanism for guaranteed enterprises. Guarantee institutions should require guaranteed enterprises to perform mortgage anti-guaranty, pledge anti-guaranty, or credit anti-guaranty. Measures for guaranties should be flexible, operational, practical, and lawful. Guarantee institutions should examine enterprises' ability of fulfilling contracts. Anti-guaranty contracts should confirm the relationship between the principal contract (loan contract) and the assistant contract (guaranty contract), the relationship between the guarantee contract and the anti-guarantee contract, the rights and obligations, the punishments, the payment, and the term.

(4) Strengthen enterprise leaders' consciousness of responsibility. For enterprises that have no sufficient mortgages and can not provide effective anti-guaranty, the legal person and the financial manager can take certain percentage of responsibility for paying loans off.

(5) Strengthen regulation and supervision on guaranteed projects. After offering guaranties for enterprises, guarantee institutions turn into potential creditors or owners of all assets of enterprises by taking relevant legal and economic duties. Therefore, guarantee institutions can join in the governance of enterprise to certain degree. They can appoint a financial supervisor to control the enterprise finance, or advance suggestions by understanding enterprise's business management and financial conditions. By this way, they can adopt risks prevention measures timely. All activities that may impact the interests of guarantors should get permission from guarantee institutions firstly.

4.6 Build a positive cooperation relationship with coordinative banks.

Credit guarantee institution is to separate banks' risks instead of taking all risks from banks so that banks can get stable profits without taking any risk. Therefore, SMEs credit guarantee institutions and banks should establish relevant rules, such as the form of guaranteed responsibility, the times of guaranteed funds, the scope of guaranty, the percentage of responsibility, the credit evaluation, the liability of contract breach, and the conditions for compensation, forming a positive mutual coexistence relationship. In form, credit guarantee institutions conflict with financial institutions. But in nature, they are on one side: separate enterprises' credit risks in financing and maintain the social credit chain. The interference of guaranty turns the former loan relation between commercial banks and enterprises into the relation among commercial banks, enterprises, and guarantee institutions. Guarantee institutions separate commercial banks' loans risks. The assets of commercial banks get higher safety, which improve their confidence in lending capitals to SMEs. As a result, SMEs can get loans easily. It is a "win-win" result for commercial banks and guarantee institutions. Therefore, as for present guarantee funds, invite professional talents in local financial institutions to join in the board or the commission, studying the countermeasures for promoting SMEs development together, constituting a reasonable credit risks-sharing mechanism for financial institutions and guarantee institutions, and finally forming a "three party" pattern including enterprises, guarantee institutions, and banks. This pattern is an ideal and effective way solving SMEs' difficulties in financing.

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A FI-STAR Approach to the Purchasing Power Parity in the

North African Countries

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Abstract

The main objective of this paper is to test the validity of the purchasing power parity in the North African countries. Earlier studies have used either nonlinear models or Long Memory (ARFIMA) process to look for the unit-root properties of the exchange rate behaviour. While the use of each technique independently can in some cases be favourable for the PPP hypothesis, it has failed in others. This is why recently the joint hypothesis of long memory and stochastic regime switching models has been developed. In fact, empirical evidence has shown that the two modelling techniques can be intimately linked. In this paper we will be using the FISTAR model proposed by van Dijk, Franses and Paap (2002) is order to test the validity of PPP. Several major findings have been raised from our study. The results show that the joint hypothesis of long memory and nonlinearity is not accepted in all our North African exchange rates. In fact, the behaviour is shown to be nonlinear. The results also show that the purchasing power parity could not be accepted in the case of Tunisia. We found that there is no evidence of long memory in the cases of Algeria and Egypt. Moreover, the study has shown that when using ESTAR model alone, this can lead to some misinterpretation of the real exchange rate behaviour in many cases. This is why it is necessary to use the FI-STAR model which would give more information to policy makers to face exchange rate shocks, especially, when these shocks are characterised by a long memory process.

Keywords: Purchasing Power Parity (PPP) -ARFIMA Models- FISTAR- Stationarity- North African countries

1. Introduction

The Purchasing Power Parity (PPP) concept is one of the oldest and most controversial relationships in the theory of exchange rates. Although the term "purchasing power parity» was coined by Cassel (1918). it has a very much longer history in economics (See, Frenkel, 1978). It is also one of the most widely tested economic hypotheses. PPP is based on the *law of one price* (LOOP) and implies that exchange rates should equalize the national price levels of different countries in terms of a common currency. Although Long run PPP is a very simple proposition about exchange rate behaviour, it has attracted the attention of researchers for a long time. Indeed, it has been viewed as basis for international comparison of income and expenditures, an efficient arbitrage condition in goods and assets, an equilibrium condition, and a theory of exchange rate determination (Officier ,1976; Frenkel, 1978; Dornbush, 1987; Isard, 1978; Breuer, 1994; Froot and Rogoff, 1995; Taylor, 1995; Rogoff, 1996; Sarno and Taylor, 2001).

Many studies in international finance have examined the validity of PPP over the long run either by testing whether nominal rates and relative prices move together in the long run or by testing whether the real exchange rate has a tendency

to revert to a stable equilibrium level over time. These studies have yielded different result outcomes depending of the testing procedures employed.

Moreover, the empirical literature on Purchasing Power Parity seems to have arrived at the consensus that real exchange rates tend toward PPP in the very long run. However, as Rogoff (1996) points out, the slow rate of convergence to PPP, with deviations having a half life about three to five years, remains a puzzle.

New developments in PPP extend the traditional approaches in two important ways. First, they recognize the nonlinearities created by information, transaction and transportation costs, and other trade impediments. This new approach refers to the modern theories of LOP and PPP (Peppinger, 2004). The nonlinearity helps resolve a number of puzzles concerning the persistence and volatility of real exchange rates. The time series models that are considered for describing and forecasting nonlinear properties of different macroeconomic variables (such as, exchange rates, unemployment…) are either Markov switching type, see Hamilton (1989). or the Threshold autoregressive [TAR], see Tong (1990). Sekkioua (2005). or Smooth Transition Autoregressive type, see Granger and Terasvirta (1993) and Franses, Van Dijk and Terasvirta (1993). The second issue that is raised by PPP literature is that shocks to exchange rate series seem rather persistent. This feature is commonly coined as the Long Memory feature; see Diebold and Rudebush (1989). and Baillie, R. (1996). The model that is used to describe such a feature belongs to the class of the Fractionally Integrated [FI] time series models; see Granger and Joyeux (1980) and Hosking (1981).

A number of empirical studies support either a non-linear adjustment of real exchange rates toward long-run equilibrium or long memory behaviour to exchange rates. However, very few are the attempts to combine he two features (long memory and nonlinearity) in one single model, see Van Dijk, Franses and Paap (2002) and Smallwood (2005).

Many recent studies have found strong evidence of complementarity and substitutability between long memory and nonlinear models. So, it would be rather useful to try to capture both features in one single model. In this paper we put forward such a model. Thus, we will be using the FISTAR model as proposed by van Dijk, *et al* (2002) in order to test the validity of the PPP in the North African countries

The rest of the article is structured as follows. In the next section we provide a short review on empirical validity of the PPP. Section 3 discusses the FISTAR methodology. Section 4 describes the data. The results are reported in section 5. A final section briefly summaries and concludes.

2. Empirical evidence on PPP

2.1 Theoretical basis on PPP

The Purchasing Power Parity (PPP) concept is one of the oldest and most controversial relationships in the theory of exchange rates. Among the most popular versions of PPP, there exist the "absolute" version which states that the exchange rate between two currencies of any pair of countries should equal the ratio of the aggregate price levels in the two currencies, and the "strict" version which relates changes in exchange rates to in inflation differential rates.

The earlier promises of the flexible exchange rates were that long-run trends in exchange markets would be denominated by relative rates of inflation, i.e. that exchange rates would follow the PPP (Friedman, 1953). and that temporary factors such as shifting interest rates might cause temporary deviations from PPP but such deviations are reduced because speculators force the market towards its long long-run equilibrium.

The two mentioned versions can be written as follows:

Absolute Version

$$lnS_t = a + b \ ln \ (p \ / \ p^*)_t + U_t$$

Relative Version

$$\Delta lnS_t = b\Delta \ ln \ (p \ / \ p^*) + V_t$$

Where S_t = the exchange rate

   $(p \ / \ p^*)$ = the ratio of domestic to foreign price indices, the asterisk denotes the foreign country.

   U_t, V_t = error terms

      Δ = the first difference operator

      a = the intercept term

      b = the slope coefficient.

There is not, however, a unique view about which price index should be used in these versions. According to one extreme view, exchange rates should be held in line with general price indices, i.e. prices of both traded and non-traded goods. Advocates of this view emphasise the role of asset equilibrium in determining the exchange rate (Cassel, 1930). A second view focuses on commodity arbitrage as the international mechanism that correct purchasing power disparities

and therefore argues that only prices of traded goods should be included in the calculation of the ratio of price indices. Supporters of this view are, for example, (Bunting, 1939; Hecksher, 1930; Pigou, 1920; Viner, 1937).

The third view goes further to account for non-traded goods only.   According to Keynes, the use of prices of traded goods only, is no more than a tautology; because it simply means that the price of a commodity must be the same elsewhere when converted into a common currency.   Hansen and Hodrick (1980) for example claimed for the use of production indices.

The choice of the price index is not the only deficiency to the PPP, other factors such as the choice of base period for relative PPP and the transportation costs may also bias the calculation of PPP.   These deficiencies have weakened the theoretical basis of PPP.

The PPP doctrine is seen as an equilibrium relationship between an exchange rate and some designated ratio of price indices.   This relationship implies that any divergence from the ratio will set in motion corrective forces acting to restore equilibrium.   The question that can be asked here is which causes which? Is it the changes in prices that cause exchange rate movements or is it the opposite?

The majority of authors recognised that prices and exchanges rates are determined simultaneously.   A minority, however, argued that there exists a causal relationship between prices and exchange rates.   Cassel (1930). for example, claimed that the causality goes from prices to the exchange rate; Einzig (1937) claimed the opposite.

2.2 Violations of PPP

This section considers some empirical results concerning the validity of purchasing power parity. The body of empirical literature on PPP (Purchasing Power Parity) focused on developing countries is quite thin, both in absolute terms and when compared to that available for industrial economies (Breuer, 1994). This is probably a consequence of the developing countries' reluctance to adopt floating exchange rates following the breakdown of the Bretton Woods system. Indeed, the fact that the majority of these countries held on for a while to fixed exchange rate arrangements-as well as to all forms of restrictions on current and capital account transactions-made it both less pressing and less meaningful to use their data to test models that relied upon (or consisted of) PPP-based notions of the equilibrium exchange rate.

The situation started to change in the late 1980s. Since then, a growing number of studies have examined the time series properties of RER in various developing countries, in many cases testing explicitly for some version of PPP.

To classify the tests employed in the studies we followed the demarcation of the various stages of tests of PPP proposed by Breuer, 1994 and Froot and Rogoff, 1995, namely: simple tests of PPP as the null hypothesis, univariate tests of the time series properties of the RER series, and cointegrating tests of PPP, both bivariate and trivariate .

The results given by these studies capture some interesting features of empirical studies of RER and PPP in emerging economies. First, in terms of coverage, there is far more evidence available for Latin American economies than for developing countries in other parts of the world. Second, the periods covered by the studies are quite short. The majority of studies conducted tests on data series that covered less than 30 years and some of them did so on series that covered less than 15 years. Third, studies relied a bit more heavily on consumer price indices than on wholesale price indices to construct their measure of relative (domestic to foreign) prices. Fourth, the majority of studies relied on some type of univariate test to examine the main properties of the RER and the hypothesis. Only very few studies (McNown and Wallace, 1989, Liu, 1992, Gan, 1994 and Seabra, 1995) conducted bivariate cointegrating tests of PPP. And fifth, studies were generally unclear about the precise PPP hypothesis that was being tested.

An obvious consequence of the predominance of univariate tests of PPP is that the bulk of the findings obtained by the above studies revolve around the stationarity of various measures of the RER. By and large, the hypothesis that the RER is stationary in developing countries (and, thus, that some form of PPP condition holds in the long run) does not receive much support from these studies. In fact, Edwards, 1989 tested the random walk hypothesis for a combined total of 44 series, and rejected it in about 2/3 of the cases.

Results from the (few) studies that used cointegration tests were somewhat more supportive of the PPP hypotheses. The two studies that conducted trivariate tests of cointegration (Liu, 1992 and Seabra, 1995) found even stronger evidence of an equilibrium relationship between the exchange rate and domestic and foreign prices (18 of 20 cases). Notably, all the support for PPP obtained from these stage-three tests stemmed from data on Latin American countries; in fact, Gan, 1994 did not find evidence of cointegration between the exchange rate and prices in any of the five East Asian countries in his sample.

Seeing what the studies have to offer, one gets the distinct feeling that our knowledge of the basic time series properties of RER in developing countries and, in particular, of the relevance of PPP as a long-run benchmark for the equilibrium RER in these economies is fairly rudimentary. The most serious shortcoming is, without question, the low power of the tests (especially of cointegration tests) to distinguish among alternative hypotheses in the short periods covered by the studies a deficiency that cannot be fixed by the common practice of increasing the number of observations through the use of

quarterly or monthly data (Froot and Rogoff, 1995, Oh, 1996). But this is hardly the only problem. The pervasive and severe data problems that one encounters in developing countries may well be at the root of these shortcomings, and it is quite possible that for many countries this constraint will not disappear for many years. But this does not alter the basic conclusion that the evidence on RER stationarity and long-run PPP contained in studies of individual developing countries does not enable us to discern which, if any, of the regularities of the long-run RER that have been found for industrial economies are also applicable to (or relevant for) the developing world.

2.3 Recent developments in PPP violations

Among the possible explanations for the violation of the law of one price and the purchasing power parity suggested by the empirical evidence, transportation costs, tariffs and non-tariff barriers are dominant. This has given rise to theoretical models of non-linear exchange rate arrangements (e.g. Williams and Wright, 1991; Dumas, 1992; Sercu, Uppal and van Hulle, 1995, Sarno and Taylor, 2001). To test these models empirically Michael, Nobay, and Peel (1997) use the Lothian and Taylor (1996) long span of annual data on dollar-sterling and franc-sterling exchange rates as well as monthly data for three real exchange rates during the interwar period and show that statistically significant nonlinearity characterizes the adjustment toward equilibrium of the real exchange rate series examined, successfully modeled as exponential smooth-transition autoregressive processes (Granger and Terasvirta, 1993). Obsfeld and Taylor (1997) investigated for the nonlinear nature of the adjustment process in term of threshold autoregressive (TAR) model (Tong, 1990). Obsfeld and Taylor provide evidence that TAR models work well when applied to disaggregated data, and yield estimates in which the thresholds correspond to popular rough estimates of the order of magnitude of actual transport costs (Sarno and Taylor, 2002).

As described earlier, a new issue has been raised in the PPP literature and is concerned by the fact that shocks to exchange rate series seem rather persistent, giving rise to a new exchange rate terminology called Long Memory models. A lot of empirical studies have used these models. The latter have tested the fractionally integrated time series. Among the pioneers, we find Baillie, R.T., Bollerslev, T., (1994). Baillie, R.T., Chung, C.F., Tieslau, M.A., (1996). Baillie, R.T.; Bollerslev, T.; Mikkelsen, H.O. (1996) and Baillie, Richard T. (1996).

As far as developing countries are concerned, Taylor and Sarno (2001) examined the behaviour of the real exchange rates of nine transition economies (Bulgaria, the Czech Republic, Hungary, Latvia, Lithuania, Poland, Romania, the Slovak Republic, and Slovenia) during the1990s. They used a nonlinear multivariate generalization of the Beveridge-Nelson decomposition. They results were supportive to the nonlinear behaviour of real exchange rates. However, and to the best of our knowledge, no empirical work has been carried out to test the nonlinearity and long memory of exchange rates in the North African countries.

3. A Long Memory Nonlinear Model

In this section, we introduce a methodology that give us the opportunity to test for both non-linearity and long memory simultaneously. We shall start first by Long memory models.

3.1 Long Memory Models (ARFIMA)

The concept of Long memory was known since work on fractional integration given by Granger and Joyeux (1980). They have found that the spectral density function of the differenced process appeared to be over-differenced, while the level of the series exhibited long run dependence that was inconsistent with stationary ARMA dynamics, Smallwood, 2005). They proposed a use of a fractional differencing operator that could produce a stationary ARMA series.

According to Granger (1980). Granger and Joyeux (1980) and Hosking (1981). the ARFIMA (p, d, q) model can be defined as:

$$\phi(L)(1-L)^d (y_t - u) = \theta(L)\varepsilon_t$$

with $E(\varepsilon_t) = 0$; $E(\varepsilon_t^2) = \sigma^2$ and $E(\varepsilon_t \varepsilon_s) = 0$ for $t \neq s$; $\phi(L) = (1 - \phi_1 L - ... - \phi_p L^p)$ and $\theta(L) = (1 + \theta_1 L + ... + \theta_q L^q)$

have all roots lying outside the unit circle, d is any real number; $(1-L)^d$ is the differencing operator and can be defined as :

$$(1-L)^d = \sum_{k=1}^{\infty} \frac{\Gamma(k-d)}{\Gamma(-d)\Gamma(k+1)} L^k$$

(1)

With $\Gamma(\ )$ is the gamma or generalised factorial function.

For -0.5< d <0.5, the process is stationary and invertible, and y_t is said to be fractionally integrated of order d (i.e.: I (d)). Thus d represents the degree of long memory behaviour. For d <1, the impulse response weights are finite, witch implies that shocks to the level of the series are mean reverting (the series are stationary).

3.2 Non Linear Models (STAR):

To capture the nonlinear feature of time series, a variety of models can be used (see, Franses & van Dijk, 2000). but the most popular model is the STAR. This model has been empirically developed by Terasvirta (1994). Generally, the model STAR (p) with two regimes can be written as:

$$y_t = \left(\phi_{1,0} + \phi_{1,1} y_{t-1} + ... + \phi_{1,p} y_{t-p}\right) + \left(\phi_{2,0} + \phi_{2,1} y_{t-1} + ... + \phi_{2,p} y_{t-p}\right)G(s_t, \gamma, c) + \varepsilon_t \tag{2}$$

With ε_t a gaussian white noise ; $G(s_t, \gamma, c)$ the transition function governing the movement from one regime to another

and s_t is a function of the transition variable so that : $s_t = y_{t-d^*}$ According to Taylor, Peel & Sarno (2001). the

transition variable the most sensible is the dependent variable that is lagged one period ; the argument γ, which determines the degree of curvature of the transition function, and the argument c, which is the threshold parameter.

 Generally speaking, the transition function could be either a logistic function (resulting in a LSTAR). or an exponential function (resulting in an ESTAR). Smallwood (2005) argued that the logistic function is preferred when asymmetric behavior is expected in the transition variable in order to distinguish between the expansion and recessions periods, (van Dijk, Terasvirta & Franses, 2002). However, Taylor, Peel & Sarno (2001) argued that the logistic function (LSTAR) is inappropriate for modelling exchange rate movements. According to them, there exist no economic reasons why exchange rtes adjust above or below the equilibrium. Thus, symmetric transition function is more appropriate. This is why , we have chosen to use an exponential transition function.

The exponential transition function can be written as follows:

$$G(s_t, \gamma, c) = 1 - \exp\left[-\gamma(s_t - c)^2\right]$$

This function is asymmetric (It does not depend on the fact that the transition variable move above or below the threshold). The parameter γ controls the degree of nonlinearity. When $\gamma \to 0$, the transition function tends towards 0, and the

model (2) will be a simple autoregressive model. And when $\gamma \to \infty$, the transition function will converge towards unity, which implies that the model (2) will be a different autoregressive model with the coefficients equal to the sum of autoregressive coefficients of the two regimes.

In order to test for the nonlinearity in the ESTAR model, we can use two hypotheses, either: $\gamma = 0$ or

$\phi_{2,0} = \phi_{2,1} = ... = \phi_{2,p} = 0$. However, the complexity of these tests is due to the fact that the parameters of the ESTAR models are unidentified under the null hypothesis of non linearity (nuisance parameter, *Note 1*). This problem is circumvented by Luukkonen, Saikkonen & Terasvirta (1988). They have proposed an approximation of the series by a

first-order Taylor expansion of the transition function. Après this approximation, the unidentification problem will be less present, and the null hypothesis of linearity can be conveniently tested using Lagrange multiplier (LM) test with a standard asymptotic distribution of χ^2 under the null hypothesis.

The development of the first-order Taylor series expansion of the transition function with $\gamma = 0$ under the constraint of $d^* < p$ can be written as follows:

$$y_t = \sum_{j=1}^{p}\left(\beta_{1,0} + \beta_{1,j}\, y_{t-j}\right) + \sum_{j=1}^{p}\left(\beta_{2,j}\, y_{t-j}\, y_{t-d^*}\right) + \sum_{j=1}^{p}\left(\beta_{3,j}\, y_{t-j}\, y_{t-d^*}^2\right) + e_t$$

(3)

The terms $\beta_{2,0}\, y_{t-d}$ and $\beta_{3,0}\, y_{t-d^*}^2$ are excluded in order to avoid the problem of multicollinearity (Smallwood, 2005). e_t is related to the disturbance ε_t is the remainder from the first-order Taylor series expansion. After this development, the null land alternative hypotheses

H0 : $\beta_{2,j} = \beta_{3,j} = 0$ with   j =1,.., p

H1 : $\beta_{2,j} \neq 0$ or $\beta_{3,j} \neq 0$ for at least one j

The χ^2 version of the LM statistic is calculated as follows :

$$LM_{\chi^2} = \frac{T\left(SSR_R - SSR_{UR}\right)}{SSR_R}$$

With T as the number of usable observations; SSR_R ; is the sum of squared errors calculated under the null hypothesis. This hypothesis is distributed as a $\chi^2(2p)$ statistic.

The F version of the test can be computed as follows:

$$LM_F = \frac{\left(SSR_R - SSR_{UR}\right)/2p}{SSR_{UR}/(T-3p-1)}$$

And is distributed as an $F(2p, T-3p-1)$ statistic.

3.3 The FI-STAR Model:

The FI-STAR model has been recently developed by Van Dijk, Franses & Paap (2002). Generally speaking, the FI-STAR model can be defined as follows:

$$(1-L)^d\, y_t = \left[\phi_{1,0} + \sum_{j=1}^{p}\phi_{1,j}(1-L)^d\, y_{t-j}\right] + \left[\phi_{2,0} + \sum_{j=1}^{p}\phi_{2,j}(1-L)^d\, y_{t-j}\right] G\left(y_{t-d^*}, \gamma, c\right) + \varepsilon_t$$

(4)

With ε_t is a martingale. In this case, the fractional difference of the time series process is a STAR model.

In their model, Van Dijk, Franses & Paap (2002) have utilised a logistic transition function (LSTAR). Smallwood (2005). have used merely the same methodology developed by van Dijk & al. (2002) but using an exponential transition function (ESTAR). Since in the work in hand we will be using an exponential transition function, we will use the methodology developed in Smallwood (2005).

The problems in the linearity tests in FI-STAR are almost the same as in the STAR models,

After a development of the first-order Taylor transition function (with $d^* \leq p$) we will have auxiliary function of (4) and can be written as follows

$$(1-L)^d y_t = \left[\phi_{1,0} + \sum_{j=1}^{p}\phi_{1,j}(1-L)^d y_{t-j}\right] + \left[\sum_{j=1}^{p}\phi_{2,j}(1-L)^d y_{t-j}y_{t-d^*}\right] + \left[\sum_{j=1}^{p}\phi_{3,j}(1-L)^d y_{t-j}y^2_{t-d^*}\right] + e_t$$

(5)

The null hypothesis for nonlinearity is as follows:

H0 : $\phi_{2,j} = \phi_{3,j} = 0$, $j = 1,...,p$

Under the null hypothesis, the time series process is distributed as a long memory ARFIMA (p, d, 0). and $e_t = \varepsilon_t$. To construct the test, we use a conditional likelihood function under the assumption of normality and constant variance. The development of linearity LM test is due to Terasvirta (1994) and van Dijk, Franses & Paap (2002). First, we estimate an

ARFIMA (p, d, 0) model, so that we obtain a residuals series $\hat{\varepsilon}$ and an integration order $\hat{d}$. The residuals sum of squares

(SSR_R) is constructed for the residuals $\hat{\varepsilon}$. after that, we estimate a regression on $\hat{\varepsilon}$ for $-\sum_{j=1}^{t-1}\frac{\hat{\varepsilon}_{t-j}}{j}$,

$1, (1-L)^{\hat{d}} y_{t-1},..., (1-L)^{\hat{d}} y_{t-p}, (1-L)^{\hat{d}} y_{t-1}y_{t-d^*}, ..., (1-L)^{\hat{d}} y_{t-p}y_{t-d^*}$, and $(1-L)^{\hat{d}} y_{t-1}y^2_{t-d^*}, ..., (1-L)^{\hat{d}} y_{t-p}y^2_{t-d^*}$. The

residuals sum of squares of this regression is denoted SSR_{UR}.

The LM test statistic of χ^2 and Fisher are calculated as the same method previously described.

The nonlinearity test in the FI-STAR model depends on the estimate value of the differentiation parameter d. To estimate the parameters in a FI-STAR model, van Dijk & al. (2002) have modified Beran's (1995) approximate maximum likelihood (AML) estimator. The latter is based on an approximation of the LM function, which minimizes the sum of squared residuals for the models ARFIMA (p, d, 0) and FI-STAR (p) :

$$S(\theta) = \sum_{t=2}^{T} \varepsilon_t^2(\theta)$$

With θ representing the parameters of the two models; the residuals are calculated using equation (4). More precisely, for the FI-ESTAR model, the errors are estimated as follows:

$$\varepsilon_t = (1-L)^d y_t - \left[\phi_{1,0} + \sum_{j=1}^{p}(1-L)^d y_{t-j}\right] - \left[\phi_{2,0} + \sum_{j=1}^{p}(1-L)^d y_{t-j}\right]\left[1 - \exp\left\{-\frac{\gamma}{\sigma^2_{y_{t-d}}}(y_{t-d}-c)^2\right\}\right]$$

To estimate the model, we use a nonlinear least squares methodology, and regarding the difficulties encountered by this joint estimation, van Dijk & al. (2002) proposed an algorithm that is based on the function of the sum of squares.

With the exception of the differentiation parameter d, the threshold c and the smoothness parameter γ, the FI-STAR model is linear in the remaining parameters. Thus, we could use the nonlinear Least Squares in order to estimate γ, c and d, and the ordinary leas squares to estimate the autoregressive parameters in the two regimes.

In order to assess the validity of the estimation algorithm Smallwood (2005) ran a set of simulations for the FI-STAR specifications. The simulation results are found to be highly supportive of the estimation technique.

4. Data description

Monthly data on nominal exchange rates for some selected North African countries (namely, Algeria, Egypt, Morocco and Tunisia) are used in our analysis. The data are obtained from the International Monetary Fund's International Financial Statistics (IFS). Precisely, the sample period the countries under analysis are as follows: It starts from 1974:01 to 2005:05 for Algeria, from 1970:01 to 2005:08 for Morocco, from 1970:01 to 2005:11 for Tunisia and from 1970:01 to 2005:10 for Egypt.

Some data were missing in the middle of the period in many cases. So, we have proceed to some interpolations in order execute model computations.

In our empirical analysis we test the real exchange rate (RER) stationarity. The RER is calculated as follows:

$$q_t = s_t - p_t + p_t^*$$

qt the real exchange rate ;

st the logarithm of nominal exchange rate ;

pt the logarithm of consumer price index of the base country ;

p*t the logarithm of consumer price index of the foreign country

5. Estimation results

5.1 Estimation of the ARFIMA (p, d, 0) model

Estimation results of the model ARFIMA (p, d, 0) are in presented in table (1). The number of autoregressive coefficients are determined using AIC and SIC criteria. The Ljung box statistic shows that two of North African countries have a high autocorrelation of errors (*Note 2*) (Algeria and Tunisia). The results in table (1) show also that with the exception of Morocco, the purchasing power parity hypothesis is accepted. Indeed the standard error at 5% for Morroco indicates that the estimated value of the d parameter is insignificantly different from unity, implying a rejection of purchasing power parity. In sum, table (1) show that there is no evidence of stationarity (all the d parameters are insignificantly different from zero, and at the same time the autoregressive coefficient is significantly inferior to unity). Thus the results are in favour of a long memory for the majority of countries (Algeria, Egypt and Tunisia,).

5.2 Nonlinearity tests

The non linearity test results of the FI-STAR model are presented in table (2). The results show that the linearity hypothesis is rejected at the 5% level For Algeria and Egypt. For Morocco and Tunisia, this hypothesis is rejected at the 10% level. Thus, all real exchange rates are non linear. In fact, the results are in favour the FI-STAR model.

5.3 FI-ESTAR estimation results

The test results show that the exchange rate behaviour is nonlinear, and more precisely in the form of a FI-ESTAR model. The results are presented in table (3). Smallwood (2005) argued that: "*The underlying estimates of the smoothness parameter γ are quite large, and as such the estimated Hessian matrix can be volatile. As a consequence, the numerical standard errors are relatively large when compared to table (1)*". The results in table (3) show that in the case Tunisia, real exchange rates are found to be nonlinear and highly persistent (It is considered as integrated of order 1). For the remaining countries, real exchange rates are nonlinear and stationary. Thus, they can be represented as ESTAR (p) models.

Other results can be shown in table (3). Such as, for instance, the autoregressive coefficients in the two regimes, the transition function, the threshold, and many other statistics that are used to evaluate the models (e.g., Kurtosis, Skewness, Jarque Bera, Ljung Box, AIC, SCI, SSE). The Ljung Box statistic shows that the problem of autocorrelation is less present in the nonlinear models than ARFIMA models.

However, we have found very difficult to give interpretation to some estimation results presented in table (3) (For instance, the case of nonlinear models without a log memory). The estimation to these models using ESTAR (p) seems to the appropriate solution to this problem.

The test results show, that even though the combination of nonlinear models with long memory models could help us to understand the real exchange behaviour in the North African countries, one could argue that ESTAR models are the most appropriate in the majority of cases. This argument goes in tune with the findings of Sarno and Taylor (2002). Using this

model, we found that with exception of Tunisia, the purchasing power parity hypothesis is accepted for the remaining North African countries.

6. Conclusion

We have tried in this paper to present a new time series model which can test at the same time nonlinearity and long memory. We have applied this model to the real exchange rate in some selected NORTH AFRICAN countries namely (Algeria, Egypt, Morocco and Tunisia). The results show that the joint hypothesis of long memory and nonlinearity is not accepted in all our North African exchange rates. In fact, the behaviour is shown to be nonlinear. The results also show that the purchasing power parity could not be accepted in the case of Tunisia. In fact the series are integrated of order 1. We found that there is no evidence of long memory in the cases of Algeria and Egypt. This last result implies the use of ESTAR models give better results concerning the description of the real exchange rate behaviour in these countries. Moreover, the study has shown that when using ESTAR model alone, this can lead to some misinterpretation of the real exchange rate behaviour in many cases. This is why it is necessary to use the FI-STAR model which would give more information to policy makers to face exchange rate shocks, especially, when these shocks are characterised by a long memory process.

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Notes

Note 1. The problem of undentified nuisance parameters under the null hypothesis is developed by Ploberger (1994); Hansen (1996) and Stinchcombe & White (1998).

Note 2. We have used many regressions, and we have found that thee regression with one coefficient only is the one that produces the lowest level of autocorrelation. And still with this level, there is a high autocorrelation.

Table 1. Results for Estimation of ARFIMA (p,d,q) Model

	Algeria	Egypt	Morocco	Tunisia
ϕ_1	0.9973 [0.0040]	0.9979 [0.0025]	0.1304 [0.0777]	0.9838 [0.0148]
ϕ	n.a	n.a	n.a	n.a
ϕ	n.a	n.a	n.a	n.a
ϕ	n.a	n.a	n.a	n.a
d	0.2134 [0.0578]	0.0262 [0.0223]	1 [0.0344]	0.0741 [0.0643]
μ	2.766 [3.3346]	1.9122 [3.4064]	-0.0782 [0.0518]	0.1176 [0.1253]
Kurtosis	18,7932	82,7698	5,8521	4,2144
Skewness	2,6385	7,9917	0,5358	0,5794
Jarque Bera	4,18E+03	1,18E+05	164,3785	25,3588
P.val [5] (Q stat)	0,093	0,8284	0,9883	0,235
P.val [10] (Q stat)	0,2015	0,006	0,6213	0,3705
P.val [20] (Q stat)	0,1065	0,002	0,46	0,2607
AIC	-8,1969	-7,5147	-8,8963	-9,1077
SIC	-8,1648	-7,4863	-8,8678	-9,0611
SSE	0,0986	0,2306	0,0576	0,0235

Notes: *The numerical standard errors are displayed in brackets under the respective coefficients. We used the SIC and AIC, coupled with a criteria that the residuals from the estimated models must be serially uncorrelated to generate the number of AR coefficients.*

Table 2. Tests Results for Linearity

	Algeria	**Egypt**	**Morocco**	**Tunisia**
LM chi2	12,1343	8,4524	5,0994	5.5537
p.value chi2	0,0023	0,0146	0,0781	0.0622
LM F	6,2251	4,2714	2,5564	2.7976
p.value F	0,0022	0,0146	0,0788	0.0632

*.denotes that the country in question is performing a linear model.

Table 3. FI-ESTAR Estimation Results

	Algeria	**Egypt**	**Morocco**	**Tunisia**
mu1	0.638 [2.189]	0.045 [0.367]	0.023 [0.010]	-0.014 [0.068]
phi1(1)	-0.533 [5.363]	0.893 [1.311]	0.441 [0.597]	0.872 [1.006]
phi1(2)	n.a	n.a	n.a	n.a
phi1(3)	n.a	n.a	n.a	n.a
phi1(4)	n.a	n.a	Na	na
mu2	-0.636 [2.188]	-0.043 [0.343]	-0.022 [0.010]	0.016 [0.067]
phi2(1)	1.53 [5.362]	0.107 [1.352]	-0.341 [0.601]	0.102 [1.012]
phi2(2)	n.a	n.a	n.a	n.a
phi2(3)	n.a	n.a	n.a	n.a
phi2(4)	n.a	n.a	n.a	na
gamma	29.826 [102.719]	4.55 [56.693]	613.423 [806.553]	50.294 [345.697]
c	0.699 [0.256]	0.034 [3.425]	0.409 [0.006]	-0.082 [0.037]
d	0.0018	0.00256	0.01285	1
Kurtosis	19,68624	73,43771	6,16848	4,20945
Skewness	2,26762	7,06496	0,52371	0,65636
Jarque Bera	4460,06657	90964,84575	195,35035	28,14308
P.val [5] (Q stat)	0,00062	0,00538	0,97235	0,63059
P.val [10] (Q stat)	0,0021	0,00025	0,08517	0,8536
P.val [20] (Q stat)	0,00039	0,00046	0,02453	0,82638
AIC	-8,36697	-7,56321	-8,92625	-9,12115
SIC	-8,29187	-7,49646	-8,85939	-9,01104
SSE	0,08118	0,21351	0,0545	0,02191

Study on the Enterprise Financial Management Modernization

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Abstract

Based on defining the meanings of financial management modernization, the contents of the financial management modernization was proposed, the purpose to push the financial management modernization was further discussed, and the course gap between foreign and Chinese enterprise financial management modernization indicated that Chinese enterprise financial management modernization still should be further strengthened.

Keywords: Financial management, Modernization, Course, Gap

Up to the late of 2007, China Association of Enterprises and China Entrepreneur Association had organized 14 sessions of "Chinese National Enterprise Management Modernization Innovation Achievement", and 1211 creative achievements were evaluated. The financial management modernization is the important part of the enterprise management modernization, and Baoshan Iron & Steel Co., Ltd, Shenzhen Airlines Co., Ltd and Zhongshan Power Supply Branch of Guang-Dian Power Grid Group had attained the great honor of "Reward of Management Modernization Result" in the financial management. But, what is financial management modernization? Which contents are concluded in the financial management modernization? Why the financial management modernization is pushed? What level is Chinese enterprise financial management modernization in comparing with western national enterprise? Aiming at these problems, a primary analysis will be made in the article.

1. Meanings of enterprise financial management modernization

Concretely, the enterprise financial management modernization is that the financial personnel with modern financial management concept utilize advanced financial management methods and measures to plan, organize, harmonize and control the financial activities of the enterprise, and maximize the enterprise values. The financial management modernization contains five concrete meanings. First, the financial management modernization is a special historical course and historical category in the financial management development. Second, the financial management modernization is the global concept. Third, the financial management modernization is a systematic project. Fourth, the financial management modernization possesses bright time character. With the development of the time and the advancement of the society, the degree of the financial management modernization increases continually, and the content of the financial management modernization is being enriched increasingly. Fifth, the financial management modernization presents the tendency of quick development. The course of enterprise financial management modernization in British and US has experienced for about 100 years, and the developing countries can use these successful experiences for references to more quickly realize the financial management modernization.

2. Contents of financial management modernization

According to the connotation of financial management modernization, the content of financial management modernization should possess two basic characters. The first character is the requirement of time, and the second character is the practical result, i.e. the financial management modernization has been tested by the practice and proved to be successful. Generally, 1970s is the period that the financial management begun mature. After 1980s, because the abundant results of natural science and social science were absorbed, especially the capital market and the market economy developed continually, the financial management begun to develop to the comprehensive management. The time of the beginning of 1980s is the watershed of the time axis when the financial management is modernized. The content of financial management modernization contains following aspects.

2.1 Modernization of financial management concept

After 1980s, with the continual development of the market economy, especially the development of the capital market, financial management developed to the comprehensive direction, and some modern financial management concepts have been rooted in the soul of financial personnel, and these financial management concepts mainly included the financial risk concept, the coin capital time value concept and the capital cost concept. The financial management

personnel should keep their ideas and concepts to follow the step of the time, which is the soul of the financial management modernization.

2.2 Modernization of financial management method

The representation form of the financial management modernization is that the financial management should actively adopt advanced modern financial management methods which have been proved effective. After 1980s, to enhance the efficiencies of decision, plan and control, and finally enhance the profit ability and competitive force of enterprise, research personnel should improve and perfect the comprehensive budget management method based on practices, and put forward ABC method and EVA method. These methods have been extensively applied in practice, and brought considerable economic benefit to enterprises, and they can be regarded as the modernization methods of enterprise financial management.

2.3 Modernization of financial management measures

Since the middle and late of 1980s, because of the spread and development of Internet and the occurrence of interactive Web application, the management mode of enterprise has spanned the limitations of time and space, and the platform to running the networking of financial management, and the networking financial management has been the modernized financial management measure recognized by the public.

2.4 Modernization of financial management organization

Since 1980s, many companies renamed the financial vice-president who managed financial activities in the company by the chief financial officer (CFO), and CFO has become into a management post exceeding other vice general managers in fact, and his work has been in the core position in the whole management of enterprise objectively, which is an important sign of financial management organization modernization.

3. Purpose to push the financial management modernization

The financial management modernization is the base and core of the enterprise management modernization. First, the modern financial management concept is the core content of the management concept modernization. Second, the modernized financial management method makes the strategy of the company to be implemented better. Third, the financial management informationization is the sign of the financial management measure modernization, and to establish the enterprise financial management information platform is one of key factors to successfully implement the enterprise management informationization.

The financial management modernization level influences the quality and efficiency of enterprise decision-making, and it can enhance the benefits of the enterprise, which has been proved in the practice. For example, after China Great Wall Aluminum Company introduced the "costing drive factor" theory of ABM, and its sales profit margin had risen from 22.24% to 40.13%, and its capital yield had increased from 3.08% to 16.06%. In the year (1999) when Yunnan Copper Industry Co., Ltd implemented the budget management, its manufacturing cost and management charges all decreased to large extent. The modernization of management measures can bring multiple benefits to the enterprise. For the statistic results that US enterprises implemented the financial management informationization in recent years, the direct benefits are mainly represented in following six aspects. (1) Reducing repertory. (2) Saving 10-30% of ground space, reducing 10-80% of machining man-hours, and decreasing 60-80% of spare part shortage rate. (3) Enhancing 5-15% of productivity. (4) The delivery rate on schedule can achieve 90-100%. (5) Reducing 7-12% of costs because of the drop of repertory. (6) Increasing 10-20% profit. And the potential advantages also include (1) enhancing decision-making level and reducing mistakes, (2) reducing the emergencies processed by managers, (3) enhancing the market change-handing ability and reflecting speed, (4) enhancing the product quality, (5) confirming the post responsibility and solving the misplacement and offside of the management layer, and realizing the effective monitor. In a word, to realize the modernization of financial management can directly or indirectly enhance the economic benefits of enterprise.

4. Foreign and Chinese developments of financial management modernization

4.1 Developments of foreign enterprise financial management modernization

After almost one century's development, the management mechanism of foreign large and middle sized companies has achieved higher level which is embodied in following aspects.

(1) Emphasizing the time value of capital and financial risk. Because most foreign enterprises are limited liability companies, so they very pay attention to the financial risk management. The first risk problem is the liability risk of the enterprise, and except for the indebted risk, the management cost of debt increases with the increase of debt, so the return of the enterprise may be decreased. On the other hand, after 1970s, foreign large-sized companies all consider the capital time value and risk return when they made investment decisions.

(2) Perfect and strict budget system. Western enterprises very emphasize the budge management, and most US

enterprises begin to collect various materials and information in the September every year, and prepare for the financial budget of the second year. The company first proposes a primary budge in Oct to discuss in various departments, and through modifying and calculating time and again, the company will finally complete a financial budge report closing the practice.

(3) Strengthening the cost control and management. Foreign enterprises generally adopt the ABC method to control the cost. ABC method means that every activity of the enterprise is analyzed by the cost, not the cost factor, and most companies all strictly control the laborer cost. In addition, foreign enterprises very emphasize the management and control of repertory. They thought the repertory included not only the real price and freight cost (the accounting cost), but also the charge of storing repertory.

(4) Modern financial management measures. Global famous multinational companies such as General Motor, Boeing, Kodak and Sony all successfully introduced the networking financial management measures and established the informationization management platform taking the financial management as the core.

(5) Reasonable organization. CFO has been popularized in western enterprise, and it has been a management position exceeding other vice-chief general managers. The works of the financial department can be divided into two types basically. The first type work is to analyze the actuality of enterprise, explain the difference between the budge and practice, report to the administration department, and check the accounting information. The second type work is to collect accounting information, plan and utilize capitals, be responsible for financing and stock management.

Thought the historical and cultural backgrounds of developed countries such as US, Germany and Japan are difference with China, but in the situation that various large-sized companies compete to develop the international market and the competition is more and more drastic, above modernization experiences can be used for references for China from the view of financial management.

4.2 Development of Chinese enterprise financial management modernization

From 1949 to 1978, in the planned economic system of China, enterprises were factories in fact, and they had no right to make decisions and had no obligation to assume the failure of management form the view of financial management, enterprises needed not to financing in thus management system, because whether the concept, budget and control or the organization were executed by the government.

After reforming and opening up, the government and the enterprises first realized the importance of the financial accounting work, and adopted various measures to foster the accounting personnel with higher level. But because the enterprises even the whole society all too emphasized the financial accounting work and the importance of financial accounting, the financial accounting and the financing management were confused. This false concept largely blocked the modernization course of the enterprise financial management. After 1990s, with the development of Chinese reforming and opening up, the central status of the financial management in the enterprise management begun to be recognized gradually, and the management level was enhanced largely. Many enterprises have obtained the honors of the national enterprise management modernization innovation result in capital management, budge management, cost management, capital management, financial management information system and financing management.

5. Gaps existing in Chinese enterprise financial management modernization

However, comparing with western enterprises, the level of Chinese enterprise financial management modernization is still lower.

5.1 The financial risk consciousness is deficient, and the concept of the capital time value has not been possessed.

Qi Yinfeng and Wang Manshu's survey (2005) to 210 listed companies and 460 non-listed companies indicated that enterprises still had not sufficient financial risk consciousness. When enterprises consider the risk, they will first consider the product risk, industrial risk and technical updating risk, and the financial risk is only in the subordinate status. The listed companies, the large-sized enterprises and the enterprises with high credit class will more consider the financial risk than non-listed companies, small-sized enterprises and the enterprises with lower credit class. In the financing, the liability financial risk consciousness of state-owned enterprise is still weak. When most Chinese enterprises make decision of investment, they only consider the investment return period and the investment return rate, not the time value concept.

5.2 Many modern financial management methods such as EVA and ABC have not been spread generally.

Wang Yanni and Wang Anmin (2004)'s research and application of EVA just started in China, and most enterprises and investors are still not familiar with this financial originality. The survey of Nanjing University discussion group (2001) showed that 70% of Chinese enterprises adopted the batch method or the process costing method in the cost management, and the cost factors which were extensively adopted included output, direct man-hour and direct material cost. Though the standard cost accounting has been applied in 63.4% of enterprises, but only 18% enterprises modify the standard cost once every year at least, and the ABC and ABM method which are playing important roles in the enterprise sustainable competition and extensively applied by western enterprises have not be extended.

5.3 The modernization level of financial management measure should be further enhanced.

For all enterprises, it is a new work to push the financial management informationization and establish a standard, high-efficient and advanced financial management information network system. Though some enterprises started early and have accumulated many experiences, but there are many concrete works to be completed.

5.4 The financial management organization should be further optimized.

For a long time, in the setup of Chinese enterprise management institution, only the accounting department undertaking financial accounting work equips necessary accountants. The names of these institutions includes "accounting office (department)", "finance and accounting office (department)", and "finance office (department)", but corresponding managers have not deserved rights.

Therefore, the development of Chinese enterprise financial management modernization still has quite big gap with above developed countries. To realize the financial management modernization is a systematic project, and it deals with various aspects, and relative tasks are very heavy, and the main works and main stages should be emphasized. First, the modern financial management concept must be established. Second, the modernized management method of successful enterprise should be studied and referred. Third, the financial management networking should be constructed.

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Assessing the Relationship between Oil Prices, Energy Consumption and Macroeconomic Performance in Malaysia: Co-integration and Vector Error Correction Model (VECM) Approach

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Abstract

This paper investigates the long run relationship between oil price, energy consumption and macroeconomic performance in Malaysia. The sample period is from (1980-2005) and the time series are subjected to various shortcomings such as autocorrelation, multicollinearity problems and host of other problems; data were first tested for their residuals. The results reveal that there is an evidence for a stable long-run relationship between the oil price, employment, economic growth and growth rate of energy consumption and also substantial short run interactions among them. Also, this paper indicates that the changes of world oil prices also affect the total energy consumption in Malaysia but reverse does not hold in Malaysia context. The linkages and causal effects among the oil price, energy consumption and macroeconomic performance have important policy implications on the benefits of energy conservation and regulation of macroeconomic policy. Given the dominant effects of oil price on energy consumption, better response and right mechanism of energy conservation policies should exist to curb the non renewable energy use and to shift extensively to the inter fuel substitution towards indigenous resources, mainly renewable energy. The most important findings here indicated that the growth of energy used has significant impacts on employment growth and present energy conservation policy especially energy saving policy and energy efficiency initiatives has significant impact on economic growth in Malaysia.

Keywords: Energy Consumption, Employment, World Oil Prices, Economic Growth, Co-integration; Vector Error Correction Model, VECM Granger Causality

1. Introduction:

This paper investigates the long run relationship and causality between energy consumption, oil price, employment growth and economic growth of Malaysia using the co-integration test of Johansen et.al (2004) and VECM causality test of Granger (1987). These tests are useful in assessing the dependence of energy consumption for Malaysian economics. This is important because when a country's economy is heavily dependent on energy consumption, environmental policies for energy conservation could adversely affect economic growth. Therefore the understanding of the direction of causality between energy consumption and economic growth could have important policy implications. Indeed, the relationship between use of energy and economic growth has been a subject of greater inquiry as energy is

considered to be one of the important driving forces of economic growth in all economies (Pokharel, 2006). Besides that, this research is also trying to look at the effects of world oil price to energy consumption as well as to the Malaysia economic performances namely the economic growth and employment.

Malaysia's economy has been growing steadily in the last several decades. With an annual average growth projected at 4.8%, the demand for energy consumption will inevitably increase (Ninth Malaysia Plan). Presently, Malaysia is blessed with both conventional and non-conventional energy sources to fuel its economy with more than 80% of its primary energy supply comes from oil and gas (www.epu.gov.my). Malaysia is endowed with conventional energy resources such as oil and gas and other renewable sources and it is currently contributing about 11% of export earning in 2004. Unfortunately, the country's proven oil and natural gas reserves are projected to be depleted in 19 and 33 years respectively if no alternatives measures are found to sustain the reserves (Malaysia Report 2008). Under the 8th Malaysia Plan, several strategies were formulated to meet the challenge including the promotion of renewable energy and efficient utilization of resources (Malaysia Report 2008). Under the 9th Malaysia Plan, the development of the energy sector will focus on diversification of fuel sources through greater utilization of renewable energy with emphasis on reducing the dependency on petroleum products (www.epu.gov.my).

Hence, it is no doubt that energy infrastructure growth has been regarded as indispensable to economic development, and is now the driver and stimulus for greater growth and industrialisation in Malaysia. Malaysia's power sector is characterized by strong growth, stable prices and abundance of natural gas resources (Malaysia Report, 2008). The Malaysian economy is expected to grow by 7.5% in the period of 2001-2010, though the GDP actually grew at a steady rate of 4.2% in 2003 (Malaysia Report, 2008). For instance, the electricity sector is undergoing substantial change, from a monopolistic, vertically-integrated industry managed by government utilities, to a sector comprising of government owned utilities as well as private sector players (Malaysia Energy Balance, 1996).

As a developing Asian Nation, Malaysia has a very interesting energy profile, both in the past and for the future. Malaysia is one of the few net exporters of energy in the Asia Pacific region. In the late 1990s, the country exported as much oil and gas as it consumed, and in recent years, oil and gas exports amounted to roughly three-fourths of domestic consumption. Availability of energy resources places Malaysia in a uniquely secure energy position relative to other countries in the region. The government has leveraged these assets to provide stability to domestic electricity markets. The gas sector was developed in tandem with the country's gas generation capacities under a "four fuel" strategy aimed at reducing the country's dependence on oil. Although the four fuel strategy required the development of gas, coal as well as hydro capacity, the clear preference was gas. TNB, which owns 62% of Malaysia's capacity, generates more output with gas (56% of total) than with coal, hydro and fuel oil combined. The country's remaining capacity comprises mainly gas-fired facilities operated by licensed IPPs.

In this context, this paper attempts to explore the possible impacts of energy consumption on employment, and economic growth rate and the effects of oil price changes on energy consumption, employment and economic growth in Malaysia. The aim of the study relates to addressing the puzzle of the increasing levels of energy consumption to induce economic growth in the event of the increasing cost associated with it as well as the apprehensions regarding its sustained supply in future. Therefore, the study undertakes an empirical analysis, towards verifying the relationship between these variables and suggesting policies that could strike a balance between consumption and conservation of energy in sustaining and speeding up the growth momentum of the economy. Even though that correlation may be present, it does not necessarily imply a causal relationship in either direction. Causality tests can provide useful information on whether knowledge of past energy consumption movements improves forecasts of movements in economic growth and vice versa.

In order to accomplish the empirical analysis, it will apply the VECM causality test to examine the short run causal relationship between oil prices, economic growth, employment and energy consumption. Also, we use Johansen & Juselius co-integration test procedures to analyse whether long run relationship between the variables on Malaysia economy exists, by using time series data (1980 – 2005).

The rest of the paper is structured as follows. Section 2 presents the background of the study. Section 3 presents the problem and objectives. Section 4 presents literature review. Section 5 presents data and research methodology. Section 6 describes the results analysis. Section 7 discusses the Policy Implications and finally Section 8 includes some conclusion and further studies recommendations.

2. Background of Study:

Malaysia's energy consumption per unit of Gross Domestic Product (GDP) is high in comparison to most developed and several advanced developing countries. The industry sector contributes about a third of the overall GDP, with a registered growth rate of 13% in 1970 to 27% in 1990. In 1995, the industrial sector accounted for 33.1% of the GDP and it was expected to grow to 37.5% by 2000 (www.epu.gov.my). Industrialization over the last two decades has reduced the share of agriculture in GDP to only 8%, leaving the service and industrial sectors to account for 44% and

48% of GDP respectively. The substantial size of Malaysia's industrial base, plus higher energy intensities of industrial activities has made the industrial sector the traditional engine of growth behind the power sector (Malaysia Report, 2008).

As a developing Asian Nation, Malaysia has a very interesting energy profile, both in the past and for the future. Malaysia is one of the few net exporters of energy in the Asia Pacific region. In the late 1990s, the country exported as much oil and gas as it consumed, and in recent years, oil and gas exports amounted to roughly three-fourths of domestic consumption (Malaysia Report, 2008). Availability of energy resources places Malaysia in a uniquely secure energy position relative to other countries in the region. In 2000, the total primary energy supply was 49.47 mtoe (million tons of oil equivalents). The fuel mix consisted of 71.4% petroleum, 11.6% hydroelectric power, 8.8% natural gas, 7.6% coal and 0.5% biomass (Malaysia Energy Balance, 2005). The greatest fuel mix is petroleum products. Energy is consumed mainly in the transportation and industrial sector, at 41.8% and 37.7% respectively, followed by commercial and residential sectors combined at 13.4% and the agriculture sector, which consumes 0.39% of the energy (Malaysia Energy Balance, 2005).

History has shown that the oil crisis in the 1970s, high oil prices, severely affect economies in both the developed and developing countries. This research attempts to briefly study the impact of spike in oil prices on energy consumption and macroeconomic performance of Malaysia as well as to assess the short run and long run relationship between these variables. However, the impact of high oil prices on Malaysia's economic performance would depend on the exposure of the Malaysian economy to oil, particularly in terms of domestic consumption even on energy consumption and the extent of the spillover effect of the increase in costs on other products and services. At the first glance as an oil exporting country, high oil prices would benefit the Malaysian economy as the positive gains from higher oil prices would offset any negative impact on the economy. This is done through pump priming whereby revenue from higher oil prices can be channeled back in to the domestic economy through Government expenditure. Higher energy prices caused by the rapid increase in oil prices would transmit into the economy by reducing the real income of households and prompting them to reduce consumption including the energy consumption. This happens due to the real balance effect that states the inverse relationship between price level and quantity demanded of Real GDP established through the changes in the value of monetary wealth (McConnell & Brue, 2008). As the price level in the economy increases, the purchasing power, and monetary wealth of households and businesses declines, thus resulting in a decline in quantity demanded of goods and services in the economy. Furthermore, high oil prices would then spread throughout the economy, driving up production and distribution costs on a wide variety of goods that will induce firms to reduce output (McConnell & Brue, 2008). in turn will affect to the number of labour employed in the economy. The increase in production and distribution costs would be caused by factors such as the rise in expected price level, workers demanding higher wages (wage push). and increases in non-labour inputs such as raw materials   in which will put pressure on the labour market (Frederic, 2007). Holding everything else constant, a decline in Real GDP due to rising oil prices would result in a decline of Malaysia's tax base and if tax rates are held constant, tax revenues will fall. Moreover, should oil prices continue to increase, the amount of government subsidies on fuel and other essential items would also increase. Thus, the Government's expenditure will rise and tax revenues would fall resulting in an increase in the country's fiscal deficit.

It can be seen that the expanding Asian economy contributed greatly to the push towards more energy use. In the 1990's, the oil production and consumption increased tremendously in line with the increase of hydroelectric and coal to produce electricity for the nation (see Chart 1). In fact the trends in energy use of Malaysia resemble the trends found in many developing countries. The total primary energy supply had increased from 5-10 mtoe during the period of 1970-1985. In 1985 the incorporation of natural gas into the fuel mix increased the energy supply to well over 30 mtoe by 1995 (Malaysia Energy Balance, 2005). Successful fuel rebalancing significantly decreased Malaysia's oil consumption while lifting its gas consumption. Oil was reduced from 87% to 43% of the country's total primary energy supply (TPES) between 1980 and 2002, while gas was expanded from 8% to 48% of TPES in the same period (Malaysia Report, 2008). The dramatic shift reduced Malaysia's exposure to oil prices, and provided the foundations for a stable power sector. Although Malaysia has an abundance of natural gas located in reserves throughout its 13 states and secure energy position relative to other countries in the region, the government's current policies have given emphasis to diversify the fuel mix in the country energy profile especially for energy security reasons. Despite not having the need to import oil currently, it seems that the oil reserves of Malaysia are far less abundant and declining (Malaysia Report, 2008). The government has also emphasized renewable energy in recent energy policies, adopting non-hydro renewables as the fifth fuel source in a new "five fuel" energy strategy. Although this indicates a policy commitment to renewables, the medium term focus will likely remain the expansion of coal output in the country's generation mix (Malaysia Report, 2008). Though this indicates a policy commitment to renewable sources, the medium term focus will likely remain the expansion of coal output in the country's generation mix. Industry accounts for (51%) of total electricity sold in Malaysia, with the remainder divided among commercial (29%). residential (19%) and other sectors (Malaysia Energy Balance, 2005).

Figure 1 shows the predicted development in relative energy demands by sectors. For example, the demand of the manufacturing and the service/commercial sector was predicted to increase from 31.3% to 39.5% and from 7.8% to 8.3% of final demand in 2020 respectively (Malaysia Energy Balance, 2005) while most of other sectors' share of total final energy demand would decline. This includes the largest single sector, namely transportation share of which was projected to drop from 44.5% in 2003 to 42.1% in 2020. Although transportation is the main energy consumer, its relative share in energy consumptions would decrease. The changes in the sectors' relative shares of final energy demand are mainly caused by the high growth rates for manufacturing sector. Energy intensity improvements are assumed to be very moderate and do not significantly impact the development. In the applied model, the residential demand is mainly determined by the growth in number of households and partly by income growth. This implies moderate demand growth for this sector.

By most estimates, Malaysia is growing 8.1 % annually and will continue at this rate for many years. Particularly, urbanization rates are rising; therefore, total primary energy demand is set to increase by nearly 7% annually (Malaysia Report, 2008). The Malaysian aim is to provide for its citizen's energy demands and for this, 18.5 billion dollars will be required over the period of 10-15 years: 60% allotted to energy generation and the remainder is for transmission and distribution of energy (Malaysia Report, 2008). Such massive economic growth and increasing infrastructure and demand will likely send the total energy use to well over 100 Mtoe in the year 2020. The urban growth rates indicate that industrial sector of the economy would continue to require huge portions of the total amount of energy used in the country (Malaysia Energy Balance, 2005). Also, Malaysia had set goals and standards for the country's future as a whole, to become a completely developed and united country by the year 2020 (Eight Malaysia Plan). Due to an increase in economic development, Malaysia intends on raising the living standard of rural and urban communities' as a well as work towards alleviating poverty, ultimately leading to an adequate and secure energy consumption in the country.

3. The Problem and Objectives:

Recently, literature concerning the relationship between energy consumption and economic growth has gained renewed interest. Energy economics literature has made significant theoretical contributions on the causal effects of energy price fluctuations on economic growth but it lacks linkages between energy consumption and economic growth. At a disaggregated level, electricity consumption is also of special interest. Generally, papers examining the relationship between energy use and economic growth have largely followed a two-step time series procedure (Johansen and Juselius, 2000). Step one is to test the existence of a long-run relationship of the time series, by investigating whether the data series are co-integrated. Step two hinges on the first results. If step one reveals a long-running relationship, then causality (lead–lag). can be tested to examine whether energy use is a leading factor for economic growth, or results from economic growth. If no long-run relationship is revealed, the investigation ends because the two time series are generated independently. When investigating the relationship between energy use and economic growth, the Engle and Granger test (1987). has been a common tool for testing co-integration.

Generally, there are two strands identified in the literature analysing the relationship between energy consumption and economic growth. The first strand includes the proponents of energy consumption as a primary means to achieve economic growth. Energy is expected to play a primary role in achieving economic, social and technological progress and to complement labour and capital in production (Ebohon, 1996). The second strand describes the role of energy as minimal or neutral and is commonly referred to as "neutrality hypothesis" (Yu and Choi, 1985). This hypothesis stems from the fact that energy consumption should not affect economic growth because it represents small proportion of country's gross domestic product. Hence, based on these strands this paper aims to break the silence in the empirical literature pertaining to the relationship between energy consumption, oil price and macroeconomic performance in the Malaysian context. In fact, there have been no individual causality studies on the impact of world oil price changes on energy consumption and macroeconomic performance in Malaysia. There was one study by Ahmad et al (2008). however, it only focused on the impact of oil price shocks on macroeconomic performance especially the impacts to consumer price index (CPI) and producer price index (PPI) and no study was done on the impact on energy consumption. On the other hand, Maamor et al (2005) had focused on the relationship between energy consumption, economic growth and employment, but did not include the oil price as additional channel of causality.

Based on these reasons, this paper attempts to extend the previous research and add world oil prices (as energy price proxy) as the third variables to allow for additional channel of causality and to help investigate whether world oil prices have a significant impact on energy consumption or even a direct effect on employment and GDP growth. In the second model however, we exclude the world oil price variable, as we intend to look at causality relationship between energy consumption, economic growth and employment and whether there is any significance difference or impacts to the whole model after we dropped the oil price variable. We added the employment variables in the both models since in the pretesting of the OLS, the employment variable has improved the number of significant variables in the models. Furthermore, based on the previous studied done in Malaysia, most of the researcher will include the employment

variables as one of the channel causality in the study of energy consumption and economic growth. This would imply that there is an indirect effect between energy consumption and economic growth, since it needs other channel to give favorable significant impacts. For instance, Maamor et al. (2005) had included the employment variable in her studied on the relationship between energy consumption and economic growth for Malaysia during the period of 1975-2000. Otherwise, the real GDP growth will not have significant impact on the energy consumption.

The research aim is to study the relationship between energy consumption, employment and economic growth to the Malaysia economy for the period of (1980-2005). Specific objectives of this research are:

(1) To study whether world oil price changes would affect energy consumption, employment and economic growth, in short run and long run.

(2) To find whether there is economic impact of energy consumption on the employment and economic growth in long run.

(3) To explore the possible existence of long run relationship and short run causality effects between energy consumption, economic growth, oil price and employment, in order to determine policy implications, whether the existing energy and macroeconomic policies give impacts to the economic growth.

The related questions that need to be addressed are:

(1) Does the change of world oil prices affect energy consumption, employment and economic growth in long run and short run?

(2) Can the economic impact of energy consumption help to increase the employment and economic growth in long run?

(3) Are there any long run relationship and short run causality effects running between energy consumption, economic growth, oil price and employment and whether the existing energy and macroeconomic policies give impacts to the economic growth?

4. Literature Review:

Nowadays, the importance of crude oil as the main source of energy has waned somewhat, due to the appearance of alternative forms of energy (such as wind, water, biomass and solar power etc).   Nonetheless, the importance of oil exceeds economic aspects and affects social life in general. Thus, the prevailing view among economists is that there is a strong relationship between the growth rate of a country and oil-price changes. Precisely, what form this relationship takes, and how it might be modified, and other such questions are issues of outstanding value. As such, the relationship between the macroeconomic variables and the oil-price shocks has been extensively analyzed in the literature. Many researchers have concluded that there is a negative correlation between increases in oil prices and the subsequent economic downturns in the United States (Hamilton 1983; Burbidge and Harrison 1984; Gisser and Goodwin 1986; Mork 1989; Hamilton 1996; Bernanke et al. 1997; Hamilton and Herrera 2001; and Hamilton 2003). Also, other studies for other countries found that strong correlation or co-integration relationship between world oil prices and macroeconomic variables exist in the long run (see e.g., Boukez 2007; Hamilton 2003; Jones et al 2004; Rodrigues and Sanchez 2004; Davis et al 2005; and Eng & Keong 2004). This relationship seems weaker, however, when data from 1985 onwards is included. Nevertheless, the role of the break-date, 1985-1986, has been considered by only very few researchers, where most of them argued that the instability observed in the relationship may well be due to a misspecification of the functional form employed. The linear specification might as well misrepresent the relationship between GDP growth and oil prices.

This misrepresentation of the linear specification has led to different attempts to redefine the measure of the oil-price changes. These attempts were based on non-linear transformations of the oil prices, in an effort to reestablish the correlation between GDP growth and oil prices. In fact, they were, actually, attempts to restore the Granger-causality between oil prices and GDP, which disappeared when data from 1985 onwards (i.e., periods of oil-price declines) were included. On the other hand, Mork (1989) found asymmetry between the responses of the GDP and oil-price increases and decreases, concluding that the decreases were not statistically significant. Thus, his results confirmed that the negative correlation between GDP and increases in oil-price was persistent when data from 1985 onwards were included.

The search for the routes by which oil price shocks work their way through the economy has had some important recent additions (although some studies have been available in preliminary versions for five years or longer). Two of these are primarily theoretical analyses (Rotemberg and Woodford, 1996; Finn, 2000) relying on aggregate models of the economy and connected with data by simulations. The others are empirical, two of which use highly disaggregated data on manufacturing plants (Davis and Haltiwanger, 2001) and individual workers (Keane and Prasad, 1996). These two disaggregated empirical studies shed light on the sectoral shocks transmission mechanism, formulated theoretically by Lilien (1982) and Hamilton (1988) and explored empirically by Loungani (1986). The other empirical studies examine

supply-side and demand side routes of impact (Lee and Ni, 2002) interest rate routes (Balke and et al, 2002) and interactions in the markets for refined petroleum products (Huntington, 1998). Lee and Ronald (1995) on the other hand, reported that the response of the GDP to an oil-price shock depends greatly on the environment of oil-price stability. An oil shock in a price stable environment is more likely to have greater effects on GDP than one in a price volatile environment. These authors thus proposed a measure that takes the volatility of oil prices into account. They found asymmetry in the effects of positive and negative oil-price shocks, but they also managed to re-establish the above-mentioned negative correlation. In the same way, Hamilton (1996) claimed that it seems more appropriate to compare the prevailing price of oil with what it was during the previous year, rather than during the previous quarter. He therefore proposes defining a new measure, the NOPI (Note 1) which also restores the negative correlation between GDP and oil-price increases

In terms of relationship between energy consumption and economic growth there is now well established in the literature, yet the direction of causation of this relationship remains controversial that is, whether economic growth leads to energy consumption or that energy consumption is the engine of economic growth. The direction of causality has significant policy implications. If, for example, there is unidirectional causality running from economic growth or employment to energy consumption, it may imply that energy policies may be implemented with little adverse or no effects on employment and economic growth. On the other hand, if unidirectional causality runs from energy consumption to income or employment, reducing energy consumption could lead to income cut and reduced employment opportunities or vice versa. If there is 'no causality' in either direction, the co-called 'neutrality hypothesis' would imply that energy policies do not effect economic growth and employment (Asafu-Adjaye, 2000).

Yang (2000) found bidirectional causality between aggregate energy consumption and GDP in Taiwan. However, he observed different directions of causality when energy consumption was disaggregated into different kinds, including coal, oil, natural gas and electricity. His results implied the importance of analyzing the relationship between different sources of energy consumption and GDP. Empirically, the direction of causality between energy consumption and economic activities for the developing as well as for the developed countries had been searched by employing the Granger or Sims techniques. Abosedra and Baghestani (1989) argued that the direct Granger test should be used to determine the direction of this causality. Also, they concluded that for all sample periods tested (1947–1972, 1947–1974, 1947–1979, and 1947–1987); there was a unidirectional causality between GNP and economic growth. The absence of any causality in the United States was also revealed by Erol and Yu (1987) as a part of a larger study including other countries.

Ebohon (1996) found a simultaneous causal relationship between energy consumption and economic growth for Tanzania and Nigeria. Kraft and Kraft (1978) supported the unidirectional causality from GNP growth to energy consumption for the United States of America for the period of 1947-1974. Erol and Yu (1987) tested data for six industrialized countries, and found no significant causal relationship between energy consumption and GDP growth and, energy and employment. Yu et al. (1988) found no relationship between energy and GNP. Yu and Chai (1985) also found causality from energy to GDP in the Philippines, but this causality is reversed in the case of the Republic of Korea. A bi-directional causality between growth of energy consumption and GNP growth was observed in Taiwan Province of China (Hwang and Gum, 1991) while Cheng and Lai (1997) found causality from economic growth to energy consumption and from energy consumption to employment without feedback in Taiwan Province of China. The interest of studying the relationship between energy consumption and economic growth arises from the need to understand the complex links between the two variables. Such understanding is basic to regulators and investors in deregulated electricity markets, in order to design a system that ensures reliability and efficiency.

Generally, we can classify these studies to date into four groups. First, a large number of studies found unidirectional causality running from energy consumption to GDP (see e.g., Altinay and Karagol 2005; Lee and Chang 2005; Shiu and Lam 2004; and Soytas and Sari 2003). Second group of studies found unidirectional causality running from economic growth to electricity consumption (see e.g., Ghosh 2002; Fatai et al. 2004; Hatemi and Irandoust 2005). A third group comprises of studies that found bi-directional causality (see e.g., Soytas and Sari 2003; Oh and Lee 2004; and Yoo 2005). The last group comprises of studies that found no causal linkages between energy, or even electricity, consumption and economic growth (see e.g., Yu, et.al 1988; Cheng 1995; and Stern 1993). However, most of these studies had focused primarily on developing economies. The unidirectional causality between energy consumption and economic growth seems to be more consistent for these countries. So, the conclusion is that a reliable increasing energy supply is required to meet growing energy consumption, and as a result to sustain paths of economic growth. Therefore, a further implication is that energy conservation policies may come into conflict with economic growth.

In the relationship between employment and economic growth, several authors have estimated employment elasticities (a measure of the relationship between employment and economic growth) by using incorporated bivariate models for a variety of nations. Boltho and Glyn (1995) found elasticies of employment with respect to output growth in the order of 0.5 to 0.6 for a set of OECD countries. An International Labour Organization Report (1996) concluded that the

responsiveness of employment growth to GDP growth has not declined in industrialized countries as a whole. However, a country-by-country analysis revealed mixed results with little relationship found in Germany, Italy and the UK in the 1990s, thus implying a jobless recovery. Padalino and Vivarelli (1997) found significant differences in employment elasticities between different countries, with an elasticity of approximately 0.5 for the United States and Canada while elasticities for Japan, France, Germany, Italy and the UK were close to zero. Pini (1997) estimated that the employment elasticities in Germany and Japan rose between the periods (1979-1995) compared to (1960-1979) while it declined in France and Sweden and showed little change in Italy, UK and US. He also detected negative employment elasticities in Italy and Sweden for the period 1990-1995.

The majority of studies mentioned above incorporated bivariate models which contain energy and economic growth or employment and economic growth for testing the co-integrating relationships and use error correction models to test for granger causality. Other studies also used bivariate models (see e.g., Nachane et al 1988; Glasure and Lee 1988; Cheng and Lai 1997). Aside from the bivariate models there were a few studies that utilized multivariate models that allow for more than two variables in the co-integrating relationships (see e.g., Oh and Lee 2004; Lee 005; Mehrara 2007; Chen et al. 2007; Mahadevan and Asafu-Adjaye 2007). The most common variables used were total primary energy consumption and real GDP, but many studies also looked at specific sectors and energy forms (e.g. industrial, residential and transportation sector or coal, oil, gas and electricity consumption). Only a few studies included energy prices (including oil prices) as a third variable, but most of them used the consumer price index as a proxy (see e.g., Masih and Masih 1996; Asafu-Adjaye 2000; and Asafu-Adjaye 2007).

Due to these reasons, we will use multivariate co-integrations and divide our model into two; for the first model we add oil prices (as energy price proxy) as a third variable that allows for additional channel of causality and helps to investigate whether oil prices have a significant impact on energy consumption or even a direct effect on employment and GDP growth. In the second model we exclude the oil price variable, as we intend to look at the causality relationship between energy consumption, economic growth and employment.

5. Data and Research Methodology

5.1 Data:

This study uses annual data to examine the causal relationship between oil prices, employment, economic growth and energy consumption for Malaysia. Yearly data on energy consumption from 1980 to 2005 were collected from the Energy Information Administration (EIA) online database (www.eia.doe.com). Total energy consumption was measured in British thermal unit (Btu). The real GDP was measured in constant price (2000 as a base year) denominated in US Dollars and was taken from International Financial Statistics (IFS). Employment of millions of people and average world oil prices dominated in US Dollars in constant price (2000 as base year) were taken from Economic Planning Unit Malaysia (www.epugov.my). Logarithm transformations of energy consumption (LENG), the employment (LEMP), economic growth (LGDP) and average world oil price (LOILP) were all taken before the analysis.

5.2 Methodology:

The time series econometric procedures were used in order to examine the relationship between growth of energy consumed, growth rate of the economy, employment and oil price i.e. whether oil price will affect energy consumption, employment and economic growth and whether energy consumption fuels economic growth or is it the growth rate of income measured by GDP at factor cost which drives the demand for more energy consumption in the economy. There are four steps involved in estimating the relationship between oil price, energy consumption, employment and economic growth. The first step is to test the stationarity of the series or their order of integration, as the series need to be integrated in the same order as shown by the Equation (1). The second step is to examine the presence of a long run relationship among all variables in the equation. However, the long run coefficients are estimated using the associated co-integration model, which is shown in Equations (2) and (3) proposed by the Johansen et al. Once the co-integration is confirmed in the model, the residuals from the equilibrium regression can be used to estimate the error-correction model in the third step. Lastly, several of diagnostic tests – which are tests of normality, autocorrelation, heteroscedasticity in the error term and the stability of model (Figure 2 and 3) have been conducted to examine the validity and reliability of these models. The results of diagnostic tests are summarized in Table 2.

5.2.1 Unit Root Test:

To analyse the long run relationship between a set of variables, Johansen and Julieus (2000) procedure suggested the use of co-integration test which require stationary pre-testing. The precondition for the co-integration of time series is for the series to be integrated in the same order. In other words, if two series are co-integrated in order d (i.e. $I(d)$) then each series has to be differenced d times to restore stationarity. For $d=0$, each series would be stationary in levels, while for $d=1$, first differencing is needed to obtain stationarity. A series is said to be non-stationary if it has non-constant mean, variance, and auto-covariance over time (Johansen and Juselius, 2000). It is important to cover non-stationary

variables into stationary process. Otherwise, they do not drift toward along term equilibrium. There are two approaches to test the stationarity: Augmented Dickey and Fuller (ADF) test (1979). and the Phillips-Perron (P-P) test (1988). Here, test is referred to as unit-root tests as they test for the presence of unit roots in the series. These tests correct any serial correlation that might exist in the series by including lagged changes of the residual in the regression. This study first ascertains the time series properties, i.e. GDP growth rate by employing the ADF test for stationarity. The equation estimated for the ADF test is as follows:

$$\Delta Y_t = \beta_1 + \beta_2 t + \alpha Y_{t-1} + \delta_3 \Sigma \Delta Y_{t-1} + \varepsilon_t \tag{1}$$

Where ε_t is an error term, β_1 is a drift term and $\beta_2 t$ is the time trend and Δ is the differencing operator. Thus if Y_t follows Equation (1), and ΔY_t follows a random walk, so $\Delta Y_t - \Delta Y_{t-1}$ is stationary. On the other hand, α and δ are coefficient of one period lagged value Y_{t-1} and ΔY_{t-1}, respectively; where $\Delta Y_{t-1} = (Y_{t-1} - Y_{t-2})$. $\Delta Y_{t-2} = (Y_{t-2} - Y_{t-3})$. The number of lagged difference terms to include is often determined empirically, the idea being to include enough terms so that the error term in Equation (1) is serially uncorrelated (Gujarati, 2003). Engle and Yoo (1987) suggested the use of the Schwarz Information Criterion (SIC) in order to select an optimum number of lags. In ADF test, it tests whether $\alpha = 0$, therefore the null and alternative hypothesis of unit root tests can be written as follows:

Ho: $\alpha = 0$ (Y_t is non-stationary or there is a unit root).

H_1: $\alpha < 0$ (Y_t is stationary or there is no unit root).

The null hypothesis can be rejected if the calculated t value (ADF statistics) lies to the left of the relevant critical value. The alternate hypothesis is that α is less than zero ($\alpha < 0$). This means that the variable to be estimated is stationary. Conversely, we cannot reject the null hypothesis if null hypothesis is that $\alpha = 0$, and this means that the variables are non-stationary time series and have unit roots in level. However, normally after taking first differences, the variable will be stationary (Johansen and Juselius, 2000). The underlying critical values were provided in MacKinnon (1991). On the other hand, the specification of P-P test is the same as ADF test, except that the P-P test uses nonparametric statistical method to take care of the serial correlation in the error terms without adding lagged differences (Gujarati, 2003). In this research we will use both of ADF and P-P test to examine the stationary of the target series.

5.2.2 Co-integration Test

The co-integration procedure requires time series system to be non-stationary in their levels. If a non-stationary series has to be differenced *d* times to become stationary, then it is said to be integrated of order *d*: i.e. I (*d*), (Engle and Granger, 1987). When both series are integrated in the same order, we can proceed to examine the presence of co-integration.

For this analysis, empirical studies had been employed such as the Engle and Granger (1987), Johansen (1988) and Johansen and Juselius (1990) method. The Johansen and Juselius test, applies the maximum likelihood procedures of the VAR model to determine the number of co-integrating vector. According to this technique, if two variables are co-integrated, the finding of no causality in either direction - one of the possibilities with the standard Granger (1969) and Sims (1972) tests - is ruled out. As long as the two variables have a common trend or co-integrated, causality must exist in at least one direction either unidirectional or bidirectional causality (Granger, 1986 and 1988). However, although co-integration indicates the presence or absence of Granger-causality, it does not indicate the direction of causality between variables. This direction of the Granger (or temporal) causality can be detected through the vector error correction model (VECM) derived from the long-run co-integrating vectors. Hence in this study we used two test statistics of co-integration which are the Trace test statistics and Max Eigen value statistics, in order to determine the number *r*, co-integrating vector. Furthermore, we employed the concept of co-integration to investigate the long run equilibrium between the variables in the multivariate Models. The analysis will base on the following equations:

$$\Delta \ln Y_t = \alpha_0 + \Sigma \beta_i \Delta \ln Y_t + \Sigma \chi_j \Delta \ln X_t + \varepsilon_t \tag{2}$$

$$\Delta \ln X_t = \gamma_0 + \Sigma \sigma_i \Delta \ln X_t + \Sigma \tau_j \Delta \ln Y_t + \varepsilon_t \tag{3}$$

Where (Y_t, X_t) are real income and energy consumption respectively; Δ is a difference operator, ε_t is a random error term with mean zero, α_0 and γ_0 are drift terms, β_i, χ_j, σ_i and τ_j are the coefficient estimates for independent variables. To perform the co-integration test, we have created the null hypothesis as there is no co-integration ($r = 0$) among variables. If Trace statistics or Max Eigen values exceed the critical value, we will reject the null hypothesis of no co-integration, which means that coefficients values of independent variables are not equal to zero. This would mean that, co-integration exists between two variables (Y_t, X_t). Therefore, the null and alternative hypothesis of unit root tests can be written as follows:

H_0:   ($r = 0$, or no co-integration exists between Y_t, and X_t).

H_1:   ($r \neq 0$, or co-integration exists between Y_t, and X_t).

The result of the co-integration test will be sensitive to the lag chosen. For this co-integration test, we used the Johansen and Juselius (2000) co-integration test and determined the proper lag profile on the basis of the SIC procedure. If the variables are co-integrated, then it implies that causality among the variables must exist, at least in one direction.

5.2.3 Vector Error-Correction Modeling (VECM)

If the series are co-integrated, Granger representation theorem states that an error correction model (ECM) describes the dynamic relationship. The VECM is a restricted VAR designed for use with non-stationary series that are known to be co-integrated. The VECM has co-integration relations built into the specification so that it restricts the long-run behavior of the endogenous variables to converge to their co-integrating relationships while allowing for short-run adjustment dynamics. The co-integration term is known as the error correction term since the deviation from long-run equilibrium is corrected gradually through a series of partial short-run adjustments. The advantage of ECM framework lies in its strength of capturing both the short run dynamics and long run equilibrium relation between two series. Durr (1993) observed that the error correction model are appropriate when the dependent variable is known to exhibit short run changes in response to changes in the independent variables.

Engle and Granger (1987) demonstrated that once a number of variables (say, X_t and Y_t) are found to be co-integrated, there always exists a corresponding error-correction representation which implies that changes in the dependent variable are a function of the level of disequilibrium in the co-integrating relationship (captured by the error-correction term) as well as changes in other explanatory variable(s). The short-term variation can be predicted by using ECM. Masih and Masih (1996), for instance, proposed the ECM, which can be explained by the following equation:

$$\Delta Y_t = \alpha_0 + \Sigma \beta_i \Delta X_{t-1} + \Sigma \chi_j \Delta Y_{t-1} + \gamma_i ECT_{t-1} + \varepsilon_t \tag{4}$$

$$\Delta X_t = \alpha_0 + \Sigma \beta_i \Delta Y_{t-1} + \Sigma \chi_j \Delta X_{t-1} + \gamma_i ECT_{t-1} + \varepsilon_t \tag{5}$$

$$ECT = Y_t - \delta X_t \tag{6}$$

where (Y_t, X_t) are real income and energy consumption respectively, Δ is a difference operator, ε_t is a random error term with mean of zero, α_0, β_i and χ_j are the coefficient estimates for independent variables, which need to be derived through a VAR regression, δ is the co-integrating factor, which can be derived through OLS in a first stage and γ_i is the coefficient estimates for error correction term (ECT_{t-1}). ECT stands for error correction term, which can also be interpreted as the speed of adjustment (Soytas and Sari, 2003; and Masih and Masih, 1996). It is then possible to verify the causality between the studied variables. In our case, for instance, Equation (4) will be used to test causation from energy consumption (X_t) to real income (Y_t), and Equation (5) will be used to test causality from income (Y_t) to energy consumption (X_t). The causality test is examined by conducting a *Wald* Test that is by calculating the joint *F* statistics of the dynamic terms based on the null hypothesis where asset of coefficients on the lagged values of independent variables is equal to zero. Therefore, the null hypothesis and alternative hypothesis in the VECM causality test can be written as follow:

H_0: Coefficient of β_i and χ_j is equal to 0.

H_1: At least one of the coefficients of β_i and χ_j, is not equal to 0.

We will conclude that the independent variables do not cause dependent variables if the null hypothesis cannot be rejected. A consequence of relationships described by Equation (4) to (5) is that either ΔX_t, ΔY_t or a combination of both must be caused by ECT_{t-1} which is itself a function of X_{t-1}, Y_{t-1}. Intuitively, if (X_t, Y_t) share a common trend, then the current change in X_t (say, the dependent variable) is partly the result of X_t moving into alignment with the trend value of Y_t (say, the independent variable). The Granger-causality (or endogeneity of the dependent variable) can be exposed either through the statistical significance of:

(i)   the lagged ECTs by a t-test;

(ii)   a joint test applied to the significance of the sum of the lags of each explanatory variables in turn, by a joint F or Wald Chi Square test;

(iii) a joint test of all the set of terms just described in (i) and (ii) by a joint F or Wald Chi-Square test, i.e. taking each of the parenthesized terms separately.

Thus, the non-significance of both the t and F or Wald Chi-Square tests in the VECM indicates econometric exogeneity of the dependent variables (Engle and Granger, 1987). In addition to indicating the direction of causality among variables, the VECM approach allows us to distinguish between 'short-run' and 'long-run' Granger causality. When the variables are co-integrated, in the short-term, deviations from this long-run equilibrium will feed back on the changes in the dependent variable in order to force the movement towards the long-run equilibrium. If the dependent variable (say, the change in the energy consumption) is driven directly by this long-run equilibrium error, then it is responding to this feedback. Otherwise, it is responding only to short-term shocks to the stochastic environment. The F-tests of the 'differenced' explanatory variables give us an indication of the 'short-term' causal effects, whereas the 'long-run' causal

relationship is implied through the significance. Otherwise, the 't' test(s) of the lagged error-correction term(s) (ECT) is derived from the long-run co-integrating relationship(s).

According to the empirical literatures analyzing causality between energy consumption and economic growth, when causality flows from energy to income (unidirectional). the economy is dependent on energy and economic growth can be adversely affected by the energy saving policies which means a reduction in energy consumption.   Boehm (2007) found that in 8 out of 23 of the European Countries the causalities are running from energy consumption to economic growth which means that energy saving policies could harm the economic growth to this related countries. However, when causality flows from income to energy, the economy is relatively less dependent on energy and environmental policies would have little or no impact on economic growth. In other words, energy conservation policies might be initiated without any negative effect on economic growth (Boehm, 2007). Bidirectional causality, on the other hand, suggests that energy and economic growth complement each other (Lee, 2005) and jointly determined and affected at the same time, but efficiency policies have no negative impact in the short run (Boehm 2007).

These theoretical contentions have been generally based on positive causality. However, when causality is negative, the energy dependence interpretation becomes less intuitive and opens to other alternative interpretations (Lee, 2005). In fact, when causality flows negatively from energy to income, increasing energy consumption would lead to lower economic growth. Conversely, when causality flows negatively from income to energy, increased economic growth results reduced energy consumption. The interpretation of such causality is not as clear as several factors may be the culprits in the adverse impact on energy. In fact, oil price factors also may put upward pressure on energy consumption (Squalli, 2007). Thus, to analyse the causality between the studied variables, this research has developed several models, associated by VECM framework which shown in the following models:

Model 1: VECM for Oil Price, Consumption, Real GDP, Employment and Total Energy include the following equations:.

1- Enegy Consumption Equation (ENG)

$$\Delta \ln Eng_t = \sigma_{10} + \Sigma\sigma_{11}\Delta \ln Eng_{t-1} + \Sigma\sigma_{12}\Delta \ln Oilp_{t-1} + \Sigma\sigma_{13}\Delta \ln Emp_{t-1} + \Sigma\sigma_{14}\Delta \ln Gdp_{t-1} + \gamma_{it}ECT_{t-1} + \varepsilon_t$$

Where; $*ECT_{t-1} = \ln Eng_{t-1} - \Phi_0 - \Phi_1 \ln Oilp_{t-1} - \Phi_2 \ln Gdp_{t-1} - \Phi_3 \ln Emp_{t-1}$

2- Economic Growth Equation (GDP)

$$\Delta \ln Gdp_t = \sigma_{20} + \Sigma\sigma_{21}\Delta \ln Gdp_{t-1} + \Sigma\sigma_{22}\Delta \ln Oilp_{t-1} + \Sigma\sigma_{23}\Delta \ln Emp_{t-1} + \Sigma\sigma_{24}\Delta \ln Eng_{t-1} + \gamma_{it}ECT_{t-1} + \varepsilon_t$$

Where; $*ECT_{t-1} = \ln Gdp_{t-1} - \Phi_0 - \Phi_1 \ln Oilp_{t-1} - \Phi_2 \ln Emp_{t-1} - \Phi_3 \ln Eng_{t-1}$

3- Employment Level Equation (EMP)

$$\Delta \ln Emp_t = \sigma_{30} + \Sigma\sigma_{31}\Delta \ln Emp_{t-1} + \Sigma\sigma_{32}\Delta \ln Oilp_{t-1} + \Sigma\sigma_{33}\Delta \ln Gdp_{t-1} + \Sigma\sigma_{34}\Delta \ln Eng_{t-1} + \gamma_{it}ECT_{t-1} + \varepsilon_t$$

Where; $*ECT_{t-1} = \ln Emp_{t-1} - \Phi_0 - \Phi_1 \ln Oilp_{t-1} - \Phi_2 \ln Gdp_{t-1} - \Phi_3 \ln Eng_{t-1}$

4- World Oil Price Equation (WOILP)

$$\Delta \ln Oilp_t = \sigma_{40} + \Sigma\sigma_{41}\Delta \ln Oilp_{t-1} + \Sigma\sigma_{42}\Delta \ln Emp_{t-1} + \Sigma\sigma_{43}\Delta \ln Gdp_{t-1} + \Sigma\sigma_{44}\Delta \ln Eng_{t-1} + \gamma_{it}ECT_{t-1} + \varepsilon_t$$

Where; $*ECT_{t-1} = \ln Oilp_{t-1} - \Phi_0 - \Phi_1 \ln Emp_{t-1} - \Phi_2 \ln Gdp_{t-1} - \Phi_3 \ln Eng_{t-1}$

Model 2: VECM for Total Energy Consumption, real GDP and Employment include the following equations:

1- Enegy Consumption Equation (ENG)

$$\Delta \ln Eng_t = \sigma_{10} + \Sigma\sigma_{11}\Delta \ln Eng_{t-1} + \Sigma\sigma_{12}\Delta \ln Emp_{t-1} + \Sigma\sigma_{13}\Delta \ln Gdp_{t-1} + \gamma_{it}ECT_{t-1} + \varepsilon_t$$

Where; $*ECT_{t-1} = \ln Eng_{t-1} - \Phi_0 - \Phi_1 \ln Gdp_{t-1} - \Phi_2 \ln Emp_{t-1}$

2- Economic Growth Equation (GDP)

$$\Delta \ln Gdp_t = \sigma_{20} + \Sigma\sigma_{21}\Delta \ln Gdp_{t-1} + \Sigma\sigma_{22}\Delta \ln Emp_{t-1} + \Sigma\sigma_{23}\Delta \ln Eng_{t-1} + \gamma_{it}ECT_{t-1} + \varepsilon_t$$

Where; $*ECT_{t-1} = \ln Gdp_{t-1} - \Phi_0 - \Phi_1 \ln Emp_{t-1} - \Phi_2 \ln Eng_{t-1}$

3- Employment Level Equation (EMP)

$$\Delta \ln Emp_t = \sigma_{30} + \Sigma\sigma_{31}\Delta \ln Emp_{t-1} + \Sigma\sigma_{32}\Delta \ln Gdp_{t-1} + \Sigma\sigma_{33}\Delta \ln Eng_{t-1} + \gamma_{it}ECT_{t-1} + \varepsilon_t$$

Where; $*ECT_{t-1} = \ln Emp_{t-1} - \Phi_0 - \Phi_{1l} \ln Gdp_{t-1} - \Phi_2 \ln Eng_{t-1}$

Where $\sigma_{1t}, \sigma_{2t}, \sigma_{3t}$, and σ_{4t} are parameters to be estimated in the equations, which need to be derived through a VAR regression, Φ is the co-integrating factor, which can be derived through OLS in the first stage and γ_{it} is the coefficient estimates for error correction term (ECT_{t-1}). Δ is a difference operator; ε_t is a random error term with mean of zero. Therefore, the null hypothesis and alternative hypothesis in the above VECM models test can be written as follow:

H_0: $\sigma_{1t}, \sigma_{2t}, \sigma_{3t}$, and σ_{4t} are equal to 0 (There is no causality).

H_1: At least one of coefficient of σ_{it} is not equal to 0 (There is causality).

If the computed F-statistics is above the critical value, we reject the null hypothesis. This means that the independent variables do not cause dependent variables. Then, it concludes that there is at least one direction or unidirectional of causality effect among the variables. On the other hand, if the calculated F-statistics is lower than critical value, we cannot reject the null hypothesis of no causality among the variables in the short run. In other words, there is no causality found in the model. Meanwhile the value of the residual estimated error correction term (ECT_{t-1}), are estimated in the deviation from long run equilibrium in period (t-1).

Statistically, the equilibrium of ECT is zero, suggesting that (in this case $\Delta LGDP_t$ and $\Delta LENG_t$) $\Delta LGDP_t$ adjusts to changes in $\Delta LENG_t$ in the period (t-1). If the computed value of ECT is nonzero then the model is out of equilibrium. If $\Delta LENG_t$ is zero and ECT_{t-1} is positive, this means that $\Delta LGDP_t$ is too high to be in equilibrium, that is, $\Delta LGDP_t$ is above its equilibrium value. Since the $\gamma_{it}ECT_{t-1}$ (coefficients estimate of ECT_{t-1}) is expected to be negative, as shown by all equations in Model 1 and 2, ΔLGD_t will be negative to restore the equilibrium. That is, if ΔLGD_t is above its equilibrium, it will start falling in the next period to correct the equilibrium error.

Conversely, if the ECT is negative and the $\Delta LGDP_t$ is below its equilibrium value, $\gamma_{it}ECT_{t-1}$ will be positive, which will cause ΔLGP_t to be positive, leading $\Delta LGDP_t$ to rise in period t. Thus, the absolute value of γ_{it} decides how quickly the equilibrium is restored. The coefficient of the lagged error-correction term (ECT_{t-1}), however, is a short-term adjustment coefficient and represents the proportion by which the long-run disequilibrium (or imbalance) in the dependent variable is being corrected in each short period. Non-significance or elimination of any of the 'lagged error-correction terms' affects the implied long-run relationship and may be a violation of theory. The non-significance of any of the 'differenced' variables which reflects only short-run relationship, however, does not involve such violations because theory typically has little to say about short-term relationships (Thomas, 1993).

6. Empirical Results:

We have estimated the relationship between energy consumption, real GDP, employment and world oil prices for Model 1 and Model 2. These estimations are presented step by step as follows:

Unit-Root Tests

This section analyses the time series properties of data during the period of 1980-2005 which were used in the ADF and P-P unit root tests. These unit-root tests were performed on both levels and first differences of ADF and P-P tests for all variables, as can be seen in Table 3.

Table 3 shows that all variables have a unit root in their level for ADF and P-P test, since the *p*-value for all series are not significant. Based on these estimated results, we failed to reject the null hypothesis of unit roots at all level. However, when we performed the unit root test at first difference, I(1), the results of ADF and P-P indicated that all variables are stationary at first difference or I(1) the *P*-value is significant at 1% and 5%. This means that after we have taken the first difference of all variables, we discovered that there is no evidence of the existence of unit roots in ADF and the P-P tests. Interestingly, however, first differencing of all the variables shows stationarity under this test.

6.1 Co-integration Test

The result of the co-integration test for multivariate via the Johansen and Juselius procedure for Model 1 and 2 are provided in Table 4. This table presents the Johansen co-integration test at selected lag levels from the minimum of SIC. We have chosen minimum SIC which is at lag 2 for this multivariate model. The null hypotheses of non co-integration were rejected, suggesting that at least one co-integrating vector existed. Also, the results of maximal eigenvalue for both models are reported in Table 4.

Table 4 shows that the null hypothesis (there is no co-integration, r = 0), is clearly rejected since the trace statistics and maxi eigenvalue exceeds the critical values at 1% and 5% level. Therefore, it can be concluded that there is only one co-integrating relation among the variables in Model 1. This implies that all variables, namely LENG, LGDP, LEPM and LOILP, are co-integrated and follow a common long run path. On the other hand, the results for Model 2 of co-integration implied that the null hypothesis of r = 0, r ≤ 1 and r ≤ 2 have been rejected since the computed value (*F*-value) of Trace test is more than critical value at 1% and 5% level. Meanwhile for max eigenvalue, it indicates that the null hypothesis of r = 0 and r ≤ 2 have been rejected at 5% level. However, at 1% level, all maxi eigenvalue are not significant. These results of co-integration for Model 2 indicate that there are 3 co-integrating equations of Trace statistics and max eigenvalue indicates 1 co-integrating equations, at 5% level. The results of co-integration in Model 2 indicate that all variables are co-integrated and present a long run relationship. The presence of co-integration among these variables also had been found by other researchers (see e.g., Ghosh 2002; Fatai et al 2004; and Hatemi and Irandoust 2005). Maamor et al. (2005) found that there is presence a co-integration relationship between economic growth, energy consumption and employment in the long run for Malaysia during the period of 1975-2000. Pedroni (2004) also, indicated at least one co-integrating relation for the panel of 19 European countries, which confirmed the

presence of long run relationship between the energy consumption, economic growth and energy price. The results for Malaysia indicated that there is existence long run co-integrating relationships among the variables. Based on the Johansen and Juselius Co-integration test, its show that in the Model 1 there is only one co-integrating relationship among the variables and while in Model 2 there are 3 co-integrating relationship. The results for model 1 and 2 are presented below:

First: Long Run Co-integration Consumption Equation:

Model 1

$$LENG_t = 21.4 - 1.18LGDP_{t-1} + 4.92LEMP_{t-1} - 0.0062LOILP_{t-1}$$

SE: (0.328) (0.695) (0.04)

t : (-3.590) (7.069) (-.1522)

Model 2;

$$LENG_t = 21.4 - 0.877LGDP_{t-1} + 4.111LEMP_{t-1}$$

SE: (0.557) (1.17)

t : (-1.57) (3.494)

Model 1 (Equation 1) shows that the real GDP and level of employment have emerged as significant determinant of energy consumption function, with *t*-value (3.590 and 7.069), but the average world oil price was not significant. However, when we excluded the oil price variables in the second Model we found that the real GDP is no longer give significant impact to the energy consumption. This indicated that oil price variables have improved the number of significant variables in the Model 1. The results would imply that real GDP growth has significant impacts to energy consumption through an oil price channels. However in Model 2, only employment variable was significant (t-value, 3.494). The value of income elasticity of demand for energy is greater than unity (1.18), for model 1. This result is in line with the Goldstein-Khan values [1.0, 2.0] for typical income elasticity (Goldstein and Khan, 1985). The estimated results of coefficients in the model 1 inferred that, there was strong negative relationship between Real GDP and Energy Consumption, with negative sign. Also, other studies support our finding, for instance Selamah et al (2005) found strong long run relationship between Real GDP and energy consumption in Malaysia (see also e.g., Gupta-Kapoor and Ramakrishanan 1999; Stern 2000; Ghosh 2002; Fatai et al 2004; and Hatemi and Irandoust 2005).

Second: Long Run Co-integration GDP Equation:

Model 2;

$$LGDP_t = 18.1 - 1.139LENG_{t-1} + 4.686LEMP_{t-1}$$

SE: (0.245) (0.602)

t: (-4.65) (7.77)

Model 2 shows that there is positive relationship between employment and economic growth. This result seem support our expected findings which suggested that when employment growth increase there will be increased in economic growth.

Third: Long Run Co-integration EMP Equation:

Model 2

$$LEMP_t = 4.34 + 0.243LENG_{t-1} + 0.213LGDP_{t-1}$$

SE: (0.0243) (0.05)

t: (5.61) (4.23)

The employment equation in 2 above shows that there is a significant relationship between EMP, ENG and GDP respectively. These results indicate that there is positive relationship between energy consumption and employment, in the long run. This means that the increased level of energy used could lead to increase of employment growth.

6.2 Vector Error-Correction Models (VECM)

VECM Granger Causality Wald Test Result Interpretation

As mentioned earlier, the F-tests of the 'differenced' explanatory variables gave us an indication of the 'short-term' causal effects, whereas the 'long-run' causal relationship is implied through the significance of the 't' test(s) for the lagged error-correction term(s) (ECT) which contains the long-term information since it is derived from the long-run co-integrating relationship(s). In order to determine the lag length of the VAR model, information theoretic model selection criteria attributed to Schwarz (1978) (Schwarz information criteria) were considered. Based on this procedure, a VAR [12] specification is selected for this analysis.

After experimenting with the general form of the ECM for each equation in both models, we found that at least one of the coefficients estimates was not equal to one. Hence the null hypothesis has been rejected. The estimated Error Correction Models for Short Run Analysis are presented and discussed in the following:

First: Short Run VECM for ENG Equations:

Model 1;

$$\Delta lnEng_t = -0.031 + 1.77\Delta lnGdp_{t-1} - 2.09\Delta lnEmp_{t-1} - 0.061\Delta lnOilp_{t-2} - 0.652ECT_{t-1} + \varepsilon_t$$

SE :	(0.036)	(0.423)	(0.67)	(0.03)	(0.151)
F :	(-0.859)	(4.18)	(-3.123)	(-1.87)	(-4.29)
P-value =	0.27	0.000	0.0002	0.06	0.000

$R^2 = 0.723$, F-Statistics= 3.77, SSE = 0.016   , $ECT_{t-1} = -0.652$

Model 2;

$$\Delta lnEng_t = 0.021 + 1.48\Delta lnGdp_{t-1} - 1.98\Delta lnEmp_{t-1} - 0.54ECT_{t-1} + \varepsilon_t$$

SE :	(0.026)	(0.32)	(0.558)	(0.10)
F:	(0.823)	(4.622)	(-3.546)	(-5.247)
P-value =	0.25	0.000	0.0002	0.000

$R^2 = 0.76$, F-Statistics= 6.7, SSE = 0.03, $ECT_{t-1} = -0.54$

Model 1 shows that the real GDP, level of employment and average world oil price have emerged as significant determinant of energy consumption function. While Model 2 shows that all determinants were also found to be significant, at 1% level. The aggregate energy consumption is found to be oil price and was inelastic demand ($\alpha < 1$).This coefficient estimate is (-0.061) while the value of income elasticity of demand energy is greater than unity (1.77 and 1.48)و for Model 1 and 2, respectively. The income and price elasticity estimates were in line with the Goldstein-Khan results [-0.50, -1.0] for typical price elasticity and [1.0, 2.0] for typical income elasticity (Goldstein and Khan, 1985).

The significant value of real income in the energy consumption function would indicate that in the short run there is positive unidirectional causality running from real income to energy consumption. This result was consistent for both models, captured by Wald test where P-value was 0.00 and significant at 1% level. These results inferred that the growth rate of national income would lead to more demand for energy consumption. The income elasticity of energy consumption (Model 1 and 2) values was found to be elastic ($\alpha > 1$), since the coefficient estimates were 1.77 and 1.48 respectively. The coefficient estimates of Model 1 (1.77) indicates that, in the short run when national income increases by 100% then the energy consumption would increase by 177%. The positive unidirectional causality running from economic growth to energy consumption seems to be more consistent for developing countries (see, e.g., Ghosh 2002; Fatai et al. 2004; Hatemi and Irandoust 2005; and Jay Squalli 2006).

Moreover, the coefficients of employment for model 1 and 2 were -2.09 and -1.98 respectively, and were the most effective coefficient among all the variables. This means that, if holding other independent variables constant and employment increases by 1%, the energy demand will decrease nearly by 2%. Then, it can be concluded that the energy demand is very sensitive to the level of employment. Also, this means that there is significant negative unidirectional causality running from employment to energy consumption at 1% and 5% level. In other words, the increase of the employment level would lead to the decrease of energy consumption, and vice versa. However, the results indicated that 76% of the energy demands variation was explained by the independent variables. The negative relationship between employment and energy consumption could be explained by the energy saving policy.

The estimated models also indicated that the null hypothesis which is world oil price does not cause to energy consumption, can be rejected with the significance at 10% level. This means that in short run the changes in world oil price would effect the energy consumption. Also, there is a negative unidirectional causality between oil price and energy consumption. However, if the world oil prices increase, the energy consumption will decrease.

The estimated coefficient of the error correction term (ECT_{t-1}) for Model 1 and Model 2 are highly significant at 1% and 5% level. This suggests the validity of a long run equilibrium relationship among the variables. In other words, the energy consumption systems had corrected its previous period's disequilibrium for the long term. However, if the changes of energy consumption were driven directly by this long-run equilibrium error, then it was responding to this feedback by 65.2 % of speed adjustment. In other words, when the variables were found to be co-integrated in this equation, in the short-term, deviations from this long-run equilibrium would feed back on the changes in the dependent variable in order to force the movement towards the long-run equilibrium.

If we compare between the two models above, we would see that in Model 1, which included oil price as the channel of causalities, the speed of adjustment is 65.2% which is higher than the speed adjustment of Model 2 (54%). These results indicated that the system that included oil price variable had corrected its previous disequilibrium by responding to this feedback faster than the second Model. The reasons could be that when there is oil price shocks or crisis in the economy the government will respond and give feedback to this shocks through its various policies, such as price mechanism control, fiscal stabilizing policies, monetary policies and fuel subsidies policies in order to control the drastic effects to the economy, which in turn could help return the economy to the right track.

Second: Short Run VECM for GDP Equation:

Model 1;

$$\Delta\ln RealGDP_t = 0.0766_{-1} - 0.126\Delta\ln Eng_{t-1} - 0.245\ln Emp_{t-1} - 0.013\Delta\ln Oilp_{t-2} - 0.111ECT_{t-1} + \varepsilon_t$$

SE:	0.026)	(0.136)	(0.486)	(0.023)	(0.11)
F :	(2.88)	(-0.93)	(-0.503)	(-0.579)	(1.00)
P-value =	0.001	0.3103	0.3276	0.5902	(0.375)

$R^2 = 0.519$, F-Statistics= 1.56 , SSE = 0.008 , ECT_{t-1} = -0.111

Model 2;

$$\Delta\ln RealGDP_t = 0.078 - 0.133\Delta\ln Eng_{t-1} - 0.42\Delta\ln Emp_{t-1} - 0.07ECT_{t-1} + \varepsilon_t$$

SE :	(0.022)	(0.137)	(0.473)	(0.008)
F:	(3.53)	(-0.966)	(-0.894)	(-0.817)
P-value =	0.000	0.293	0.274	0.223

$R^2 =$ 0.426 , F-Statistics= 1.59 , SSE = 0.026 , ECT_{t-1}= -0.07

The above estimated models show that the relationship between GDP, ENG, EMP, OILP, and error correction terms is insignificant, even at 10% significance level. The non-significance of the t, F and Wald Chi-Square tests indicates econometric exogeneity of the dependent variables (Granger, 1986).

Third: Short Run VECM for EMP Equation:

Model 1;

$$\Delta\ln Emp_t = 0.045 + 0.349\Delta\ln Gdp_{t-1} - 0.17\Delta\ln Eng_{t-1} - 0.004\Delta\ln Oilp_{t-1} + 0.053ECT_{t-1} + \varepsilon_t$$

SE:	(0.014)	(0.168)	(0.074)	(0.012)	(0.06)
F:	(3.12)	(2.08)	(-2.34)	(-0.34)	(0.879)
P-value =	0.17	0.09	0.058	0.8429	0.206

R^2= 0.678 , F-Statistics= 0.014 , SSE = 0.0026 , EC_{t-1} = 0.053

Model 2;

$$\Delta\ln Emp_t = 0.647 + 0.396\Delta\ln Gdp_{t-1} - 0.175\Delta\ln Eng_{t-1} - 0.003ECT_{t-1} + \varepsilon_t$$

SE:	(0.297)	(0.142)	(0.07)	(0.04)
F :	(-1.78)	(2.77)	(-2.411)	(-0.08)
P-value =	0.17	0.007	0.05	0.206

R^2= 0.65 , F-Statistics= 3.93 , SSE = 0.002 , EC_{t-1} = 0.003

The EMP equation (model 1 and 2 above) shows that real GDP and energy consumption have emerged as significant determinant of employment function models. There is short run dynamics causality effect between energy consumption and employment level and between real income and employment with statistic significance at 10% and 5%, respectively. However, no adjustment has been made in the long run, since the error correction term was insignificant (P-value = 0.206). The estimated coefficient also indicated that there was negative unidirectional causality running from energy consumption to employment and positive unidirectional causality running from real income to employment, and they were consistent in both models. This means that in short run there is adverse effects between employment and energy consumption, and direct effects between employment and real income. Also, the increase of real income would lead to increase in employment level.

Fourth: Short Run VECM for OILP Equation, Model 1:

$$\Delta lnOilp_t = 0.530 + 1.64\Delta lnGdp_{t-1} - 6.99\Delta lnEmp_{t-1} - 1.14\Delta lnEng_{t-1} - 0.066ECT_{t-1} + \varepsilon_t$$

SE :	(0.297)	(3.42)	(5.44)	(1.52)	(1.231)
F:	(-1.78)	(0.48)	(-1.28)	(0.753)	(0.54)
P-value =	0.17	0.7628	0.4374	0.206	0.345

R^2= 0.419, F-Statistics= 1.04, SSE = 1.07 , ECT_{t-1} = 0.066

The oil price model indicated that in the short run world oil price become an exogenous variable, since all independent variables were not significant, even at 10% significance level. The error correction term (ECT) was also not significant, as showed by P-value (0.345). The non-significance of t, F and Wald Chi-Square tests indicated the presence of econometric exogeneity of the dependent variables (Granger, 1986). These results were quite similar to Glasure's (2002) findings. Thus, the overall VECM causality results can be summarized in Figure 4.

Insert Figure 4 Here

Figure 4 shows that there is short run causality running from ENG to EMP, EMP to ENG, GDP to EMP, GDP to ENG and WOILP to ENG. In other words, the VECM causality test indicated that in the short run there is positive unidirectional causality effects running from real income to energy consumption and real income to employment, however opposite does not hold good in Malaysian context. Beside that, there is negative bidirectional causality effect between energy consumption and employment, and vice versa, which means that the changes of energy consumption and employment would affect each other. In the case of Malaysia, the world oil price becomes an exogenous variable since all independent variables in oil price model are not significant (see Table 6-b).

The error correction term (EC_{t-1}) is only significant in the energy consumption model. So, it can be concluded that in the short-term, for any deviations from long-run equilibrium, the energy consumption will feed back on the changes in the independent variables in order to force the movement towards the long-run equilibrium. If energy consumption is driven directly by this long-run equilibrium error, then it is responding to this feedback. The coefficient estimate of error correction term of -0.652 for the Model 1 (Equation 1) means that when there is an exogenous shock on the model, the system corrects it disequilibrium by 65.2% speed of adjustment per year in order to return to the equilibrium. Also, both models show that the energy consumption has shown negative sign of ECT which is indicating a move back towards equilibrium. On the other hand, if it has a positive sign of error correction term, it indicates that the systems in the model are moving away from equilibrium (Granger, 1978).

7. Policy Implications:

The linkages and causal effects among the oil price, energy consumption and macroeconomic performance have important policy implications on the benefits of energy conservation and regulation of macroeconomic policy. According to the empirical literatures that analyze causality between energy consumption and economic growth, when causality flows from energy to income (unidirectional), the economy is dependent on energy and economic growth can be adversely affected by the energy saving policies which means a reduction in energy consumption (Boehm, 2007). However, when causality flows from income to energy, then the economy is relatively less dependent on energy and environmental policies would have little or no impact on economic growth. In other words, energy conservation policies might be initiated without any negative effect on economic growth (Boehm, 2007). Bidirectional causality, on the other hand, suggests that energy consumption and economic growth complement each other (Lee, 2005) and jointly determined and affected at the same time, but efficiency policies have no negative impact in the short run (Boehm, 2007). These theoretical contentions have generally been based on positive causality. However, when causality is negative, the energy dependence interpretation becomes less intuitive and is open to other alternative interpretations (Lee, 2005). In fact, when causality flows negatively from energy to income, the increase of energy consumption would lead to lower economic growth. Conversely, when causality flows negatively from income to energy, the increase of economic growth would result in reduced energy consumption. The interpretation of such causality is not as clear as several factors may be the culprits in the adverse impact on energy. In fact, oil price factors also may put upward pressure on energy consumption (Squalli, 2007).

The VECM estimated study results inferred that in short run there is positive causality running from economic growth to total energy consumption. This would imply that when national income rises, it directly leads to more consumption demand for energies in Malaysia, which may imply that energy saving policies may be implemented with little adverse or no harm effects on economic growth in the short run. However, in the long run there is negative effect from economic growth to total energy consumption which may imply that energy policy especially would have significant impacts on economic growth in the long run. The findings of this study which is a unidirectional running from GDP to energy consumption have also been supported by the previous research (see Kraft and Kraft, 1978). They found the unidirectional causality from GNP growth to energy consumption for the USA for the period of 1947-1974. However, the Granger causality of VECM analysis suggested that there could be two-way causality between energy consumption

growth and economic growth in the future. There could be a similar unidirectional influence from economic growth to disaggregated energy consumption and from disaggregated energy consumption growth to economic growth (Granger, 1978). Importantly, the estimated results would infer that the presence energy policy has significant impact on economic growth in Malaysia in the long run but not in the short run. This could be explained by the implementation of energy conservation policy that relates to energy saving and efficiency policies which had been introduced since 1999 under a "four fuel" strategy aimed at reducing the country's dependence on oil revenue (Malaysia Report, 2008).

Moreover, the results show that there is negative relationship between energy consumption and employment, in short run but positive relationship in the long run. In other words, the increase of energy used could lead to the increase of employment growth, in long run. Establishing positive relationship between energy used and employment has important policy implications, which can be explained by the improvement in economic activities in country especially in industrial and manufacturing sector, since to increase the scale of production there is a need to increase the level of energy used and numbers of labours employed to support the production, which in turn will translate into a hike on employment growth. The estimated results also indicated that employment growth has positive impacts to economic growth, since the people standard living have improved this would lead to expanding the economic activities and hereby stimulate the growth of economic in the Malaysian economy. Concisely, based on the research finding it inferred that economic impacts of energy consumption help to increase the employment and economic growth in long run, which answered the second research question.

This study found that the changes in world oil price do not have any significant impact to Malaysia's real GDP either in the short run or long run, which we highlighted in the first research objectives. These results seem do not support our expected findings as there should be negative relationship between oil price and economic growth. Furthermore, should oil prices continue to increase, the amount of government subsidies on fuel and other essential items would also increase. Thus, the Government's expenditure will rise and tax revenues would fall resulting in an increase in the country's fiscal deficit. However, this could be explained by the successful fuel rebalancing which significantly decreased Malaysia's oil consumption between 1980 and 2002. The dramatic shift reduced Malaysia's exposure to oil prices, and provided the foundations for a stable power sector; in turn avoid the severe impact to nation's real GDP growth.

Regarding the negative unidirectional causality effects running from oil prices to energy consumption, it shows that in the short run the world oil price changes would have adverse affect to energy consumption. However, in the long run, there is non significant relationship between oil price and energy consumption in Malaysia, which have policy implications. Increasing the price of energy in short run, especially oil will have two effects: direct and indirect effects on the price level. The increase of oil price directly increases in the consumer price index (CPI) and causes indirect effect to Producer Price Index (PPI) (Ahmat et.al, 2008). The industry producers will transfer the increase in the energy prices in their operating cost to the goods and services price. This will trigger macroeconomic effects in the form of the increases in prices of goods and services. In addition, in the short run the uncertainty of the oil prices may also affect the consumer expectation as if they expect the higher oil price. This will cause inflation and would produce long term effects. As a result they will reduce the energy used, especially oil and shift to the inter fuel substitution mainly bio fuel or gas. Hence, in the short run, the higher oil price will cause a decrease in the non renewable energy consumption.

Moreover, the results show that there is positive causality running from economic growth to employment either in the short run or long run. The positive relationship also been supported by the previous findings by

Selamah et al. (2005), which studied the relationship between employment and economic growth in Malaysia from 1975 to 1995 (see also e.g., Pini 1997; Pianta, et al 1996). The government policy affects human capital development i.e. labour skills through educational policies, worker training or relocation programs and health programs in order to boost productivity growth which in turn will affect the economic growth (Nine Malaysia Plan). When the productivity of labour increased, the number of new workers to be employed would be affected. Positive relationships in the long run would mean that restructuring of major economic sectors has increased relationship between employment and economic growth.

Importantly, the estimated research finding indicates that there is a long run relationship between energy consumption, economic growth, oil price and employment and also short run causality effects between the studied variables in the models, which shows that there is a unidirectional causality running from real GDP to employment, a unidirectional causality from real GDP to energy consumption, a unidirectional causality from oil price to energy consumption and only one bidirectional causality running between employment growth and energy consumption, or vise versa. Interestingly, our estimated results infer that the presence energy policy has significant impact on the economic growth in Malaysia in the long run but not in the short run. Based on the research findings, it has proved that in the long run the existing energy and macroeconomic policies in Malaysia has significantly impacts to the economic growth as well as employment growth, which already answered the third research question.

8. Conclusions and Further Studies:

The main result of this paper is that long-run relationship between the oil prices, economic growths, and employment and growth rate of energy consumption does exist in Malaysia. The implication of the co-integration among the variables studied would imply that all series in the model move together in the long run. This co-integration relationship provides information about the long run relationship.

Again these results support the previous findings from other researches and the theory behind the relationship studied. Establishing negative relationship between real economic growth and energy consumption and positive relationship between energy consumption and employment growth in the long run have important policy implications. It shows that the present energy conservation policy especially energy saving policy and energy efficiency initiatives have able to give significant impact on both employment growth and economic growth in Malaysia. The study could suggest that for achieving higher economic growth, reducing oil, gas and coal especially in the consumption sectors of the economy and shifting towards indigenous resources mainly, hydropower and biomass would have positive impact on the current account balance. The consumption of these non-renewable energies would increase the deficit in Malaysia's balance of payment position of the economy in the future. Hence, there should be wide-ranging efforts to exploit the renewable sources of energy for consumption and production purposes especially in industrial sector. This sector consumed 35.7 percent of total commercial energy in Malaysia. Furthermore, the extensive uses of combustion fuel in the industries have contributed massively to the emission of CO_2, a greenhouse gas, into the atmosphere. These gases can exacerbate global warming and lead to environmental destruction and health hazards.

Another interesting question from the above empirical analysis is that, why the energy consumption doesn't contribute to the economic growth in the short run? In other words, had there been an increase in supply of energy from other sources, there would have been much better economic growth? Then given the supply constraint, what should be the energy policy for Malaysia in particular? Is there a possibility of converting the abundant availability of gas into other qualitative energies? These are the relevant issues for future research which need to be addressed for a rational national energy policy. It has been suggested that in order to retard the fuel import growth, inter fuel substitution towards indigenous resources, mainly hydropower would be required. The expansion of hydropower would replace diesel-based electricity generation. Electricity can be treated as a potential fuel to replace petroleum products mainly in household and transportation sector. One can also undertake a study on the energy use in different sectors and their contribution to the growth of the sector as each sector has different energy use intensity for different forms of energy use.

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Notes

Note 1. Net Oil Price Index.

Table 1. Historic and projected average household size by region.

Avg. hh size	1970	1980	1991	2000	2010	2020
MY	5.5	5.2	4.9	4.5	4.2	3.9
PM	5.5	5.2	4.9	4.4	4.1	3.8
SB	5.3	5.4	5.2	5.1	5.1	5.0
SW	6.0	5.5	5.0	4.7	4.3	3.9

Sources: Malaysia Energy Balance

MY (Malaysia). PM (Peninsular Malaysia). SB (Sabah) and SW (Sarawak)

Table 2. Diagnostic Test of VECM Model.

Diagnostic	Parameter estimates		F- Value	
	Model 1	Model 2	Model 1	Model 2
LM (2)	4.192	16.29	0.8983	0.4326
Hetero (2)	171.014	74.54	0.6724	0.7602
Jarque-Bera	18.114	10.922	0.0204**	0.0908
CUSUM test	ok	ok		

Table 3. ADF and P-P unit root tests for stationarity.

Variables	ADF				P-P			
	Level		1st Differences		Level		1st Differences	
	t-statistic	p-value*	t-statistic	p-value*	t-statistic	p-value*	t-statistic	p-value*
LENG	-1.539	0.4977	-3.44	0.0194**	-1.99	0.2877	-3.288	0.0269**
LGDP	-0.61	0.8511	-3.41	0.0204**	-0.573	0.8596	-3.465	0.0183**
LEMP	-0.855	0.7852	-5.299	0.0003***	-1.66	0.4376	-6.21	0.000***
WOILP	-1.283	0.6208	-4.964	0.0006***	-1.283	0.6208	-4.978	0.0006***

Notes: *indicate the one-sided p-values for testing the null hypothesis that the variables have a unit root or non stationary.

***, **, * indicate the significance level of 1%, 5% and 10%, respectively.

The optimum lags lengths for ADF determined by the Schwarz Info Criterion (SIC).

Table 4. Johansen's Test for Multivariate Co-integrating Vector.

MODEL 1: LENG, LGDP, LEMP and LOILP.							
Hypothesized No. of CE(s)	Trace Statistic	Critical Value		Maxi Eigenvalue	Critical Value		Results
		0.05	0.01		0.05	0.01	
None* (r = 0)	(60.97***)**	47.856	54.681	(36.177***)**	27.584	32.715	Trace Test and max-eigenvalue indicates1co-integra tion equation at 1% and 5% level
At most 1 (r ≤ 1)	24.793	29.797	35.458	14.926	21.131	25.861	
At most 2 (r ≤ 2)	9.866	15.494	19.93	7.699	14.264	18.52	
At most 3 (r ≤ 3)	2.167	3.841	6.634	2.167	3.841	6.634	
MODEL 2: LENG LGDP LEMP							
None*	(40.516***)**	29.797	35.458	24.575**	21.132	25.861	Trace test indicates 3 and max-eigenvalue indicates 1co-integration
At most 1* (r≤1)	15.941**	15.494	19.937	9.924	14.264	18.52	
At most 2*(r≤2)	6.017**	3.841	6.634	6.017*	3.841	6.634	

Note: ***, ** and * denote statistically significant at 1%, 5% and 10%, respectively.

Table 5. Government Expenditure and Oil Revenues, 2005-2007 (RM billion).

Sources	2005	2006	2007
Oil Revenues (Oil tax, royalty and dividend, and export duty).	31.0	45.5	51.1
Petrol/ Gas Subsidies.	8.2	7.3	8.8
Ratio Subsidies/Oil Revenues (%).	26.45	16	17

Source: www.epu.gov.my

Table 6(a). Vector Error-Correction (VEC) Model- Estimation Results for logarithmic series.

	Dependent Variables	Independent Variable (F-statistics)								ECT	
		$\Delta LENG_{t-1}$		$\Delta LGDP_{t-k}$		$\Delta LEMP_{t-j}$		$\Delta LWOILP_{t-l}$		ΔEC_{t-1}	
	Equation	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2
1	$\Delta LENG_t$	0.29(+)	0.185(+)	1.767(+)	1.48(+)	-2.09(-)	-1.98(-)	-0.06(-)	n/a	*-0.652*(-)	-0.533(-)
	SE	0.187	0.1628	0.423	0.32	0.647	0.558	0.032	n/a	0.151	0.1
	F	[1.58]	[1.134]	[4.179***]	[4.622***]	[-3.123**]	[-3.546***]	[-1.87*]	n/a	[-4.29***]	[-5.247***]
2	$\Delta LGDP_t$	-0.126(-)	-0.133(-)	0.33(+)	0.389(+)	-0.245(-)	-0.423(-)	-0.013(-)	n/a	0.11(+)	0.07(+)
	SE	0.135	0.138	0.306	0.272	0.486	0.473	0.023	n/a	0.11	0.086
	F	[-0.93]	[-0.966]	[1.08]	[1.433]	[-0.5]	[-0.894]	[-0.579]	n/a	[1.00]	[0.817]
3	$\Delta LEMP_t$	-0.174(-)	-0.175(-)	0.349(+)	0.396(+)	-0.43(-)	-0.547(-)	-0.004(-)	n/a	0.053 (-)	-0.003(-)
	SE	0.074	0.07	0.168	0.142	0.267	0.249	0.012	n/a	0.06	0.045
	F	[-2.34**]	[-2.411**]	[2.077**]	[2.77**]	[-1.62]	[-2.20**]	[-0.338]	n/a	[0.879]	[-0.083]
4	$\Delta LWOILP_t$	1.145(+)	n/a	1.649(+)	n/a	-6.99(-)	n/a	-0.03(-)	n/a	0.667(+)	n/a
	Se	1.52	n/a	3.42	n/a	5.44	n/a	0.25	n/a	1.23	n/a
	F	[0.753]	n/a	[0.48]	n/a	[-1.28]	n/a	[-0.135]	n/a	[0.54]	n/a

Note : (Note : (   ) Standard errors and [   ] *F*-statistics

*** ***, ** and * denote statistically significant at 1%, 5% and 10%, respectively.

*value for ECM_{t-1} is the t-value and (+) and (-) signs indicate the short run effects.

Table 6(b). VECM Granger Causality/Wald Test

Dependent Variable	Joint short/ long term test (chi-square)							
	LENG and ECT		LGDP and ECT		LEMP and ECT		LOILP and ECT	
	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2
D LENG$_t$	n/a	n/a	23.47	27.96	16.68	22.35	5.4	n/a
	n/a	n/a	(0.00***)	(0.00***)	(0.0002***)	(0.00***)	(0.067*)	n/a
D LGDP$_t$	2.34	2.213	n/a	n/a	2.232	3.57	1.05	n/a
	(0.3103)	(0.3306)	n/a	n/a	(0.327)	(0.168)	(0.59)	n/a
D LEMP$_t$	5.688	5.814	4.748	9.71	n/a	n/a	0.342	n/a
	(0.058*)	(0.055*)	(0.093*)	(0.0078***)	n/a	n/a	(0.8429)	n/a
D OILP$_t$	3.157	n/a	0.54	n/a	1.65	n/a	n/a	n/a
	(0.2063)	n/a	(0.7628)	n/a	(0.4374)	n/a	n/a	n/a

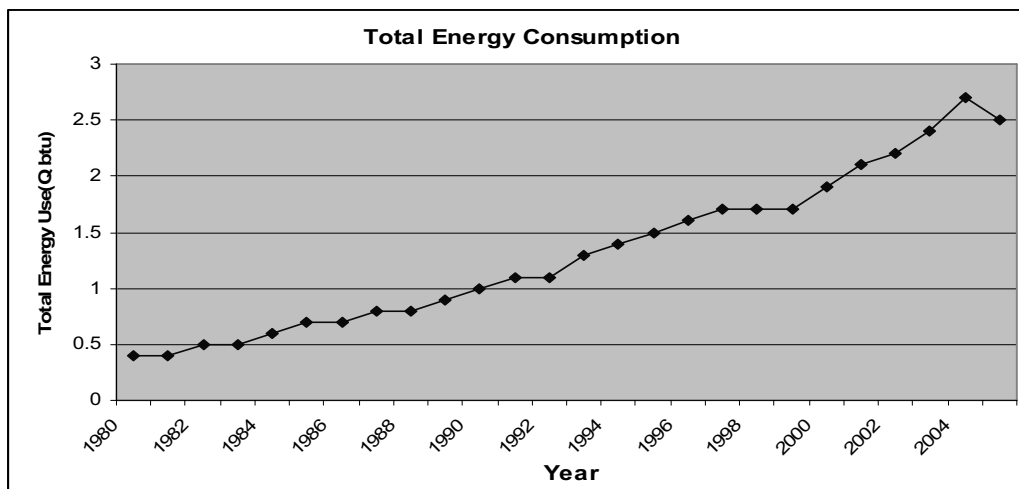Note: ***,** and * denote statistically significant at 1%, 5% and 10% , respectively.

The table reports the chi-sq value and probability value is in parentheses at 2 degree of freedom (df).

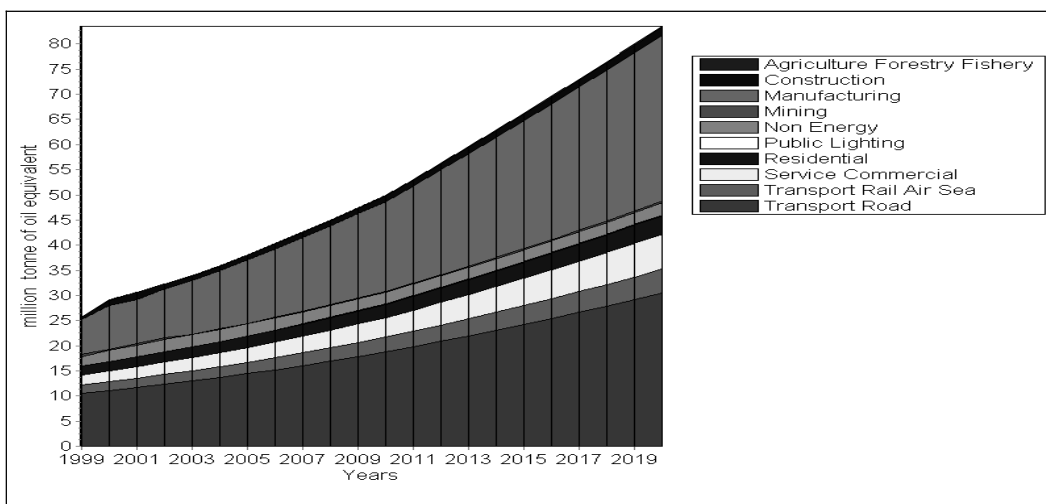Table 7. Fuel and Diesel Price (in Liters) Comparison among Selected Countries 2004 and 2006.

Country	2004		2006	
	Petrol	Diesel	Petrol	Diesel
Malaysia	1.41	0.84	1.96	1.48
Thailand	2.05	1.41	2.59	2.41
Indonesia	1.03	0.68	2.11	1.63
Singapore	3.38	2.09	3.40	2.33
Vietnam	1.82	1.22	2.48	1.96
Myanmar	0.46	0.38	2.44	2.78
Taiwan	2.70	2.09	3.07	2.63
Hong Kong	5.85	3.80	6.25	3.92
China	1.82	1.63	2.55	2.26

Sources: www.epu.gov.my

Source: Own Computation based on EIA database

Chart 1. Energy Consumption Growth in Malaysia

Source: Malaysia Energy Balance.

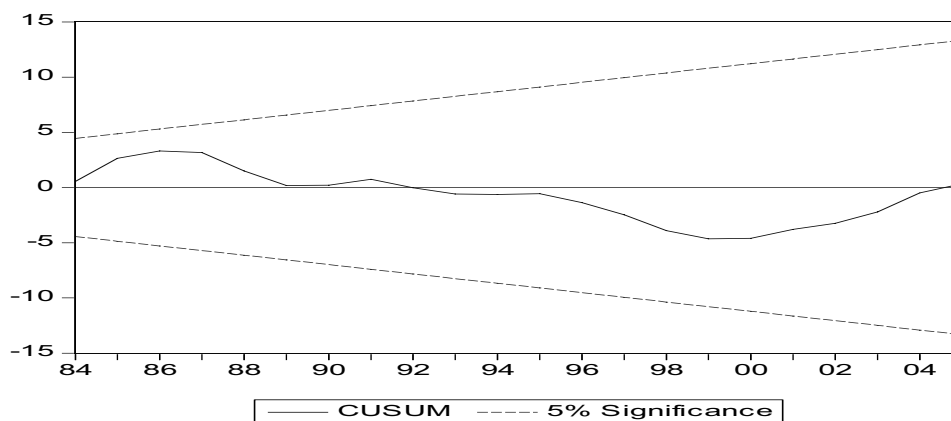Figure 1. Final Energy Demand 2000 - 2020 by Sectors - Future Scenario.

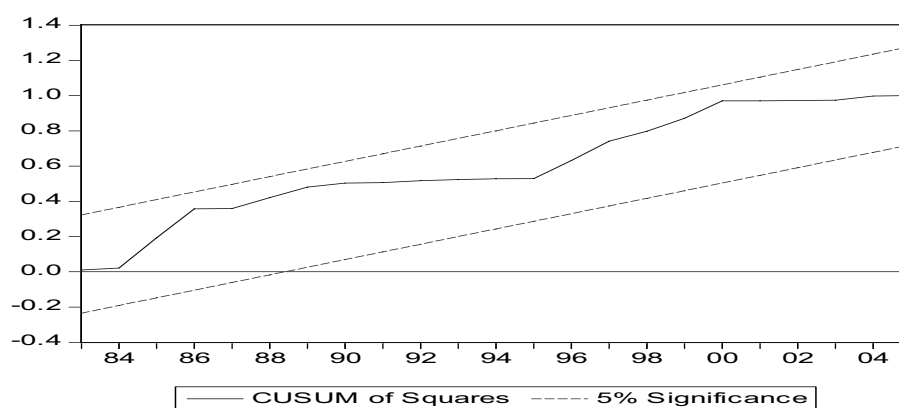Figure 2. Stability Test of Energy Consumption Function Model 1.

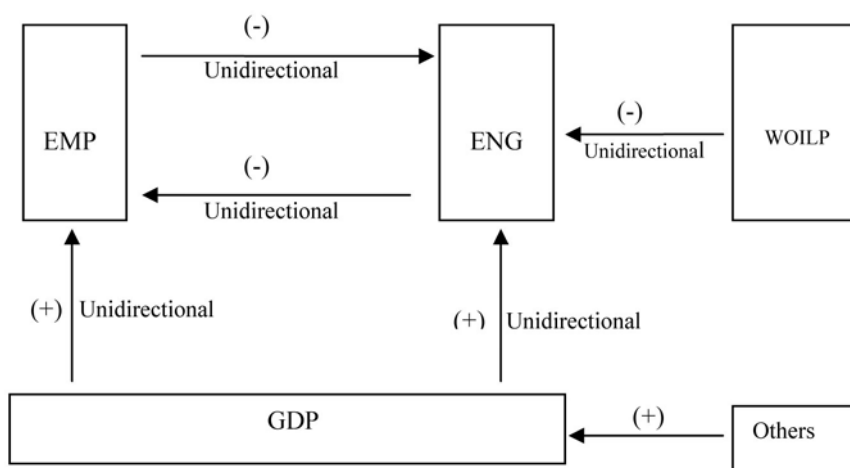Figure 3. Stability Test of Energy Consumption Function Model 2.

Figure 4. VECM Short Run Causality Test for LENG, LGDP, LWOILP and LEMP.

Business Clusters in China: from a Distinctive Perspective

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Abstract

There has been an increasing research interest in business clusters since regional clusters are found in every advanced economy and increasing in low-income economies. The existing literate tends to focus on studying China's cluster from a universal perspective. The distinctive perspective lacks of exploration. This perspective can be identified from five attributes of China's reality after open door policy. Such attributes determinates a domestic fragmentation of cluster distribution in China.

Keywords: Business Cluster, China, Distinctive perspective, Open door policy

1. Introduction

There has been an increasing research interest in business clusters since regional clusters are found in every advanced economy and increasing in low-income economies. Industrial concentration can promote sharpen the competitive edge of local industries. China, with no exception, is also dominated by industrial by business clusters-geographic concentration of interconnected enterprises in a particular industry that gain competitive advantages through co-location. In China, the output of many business clusters make up significant shares of the national total and even the world's total.

In china, business clusters have a fairly long history. Jingdezhen has p pottery and porcelain production clusters with a history of more than 1400 yeas; while Shene Town of Wujiang in Jiangsu Province has been one of the well-known skill centres in China for hundreds of years. Nevertheless, the development of industrial clusters gained momentum after the country implemented its reform its reform policies in 1978. Therefore, business clusters in China have been "marked" with some special Chinese socialist characteristics. For example, in Zhejiang province, under the pressure of excess manpower and limited farmland, a lot of local peasant in the rural areas had turned to turn their own household-based workshops. Thus, such self -augmented industrial were set up by the small and private enterprises; exported-oriented business clusters, largely dominated by FDI formatted in the early 1980s in Guangdong province due to this region formulated preferential policies to attract overseas investors to set up outward-processing plants; the high-tech industrial also emerged in this period. Zhongguangcun in Beijing greatly benefits from being situated in research environment where a large number of high-level research agents and universities are located; some business clusters such as food processing cluster in Luohe, Henan provinces featured as resource-driven clusters and; the wooden cluster in Linyi, Shandong province can be classified into market-driven cluster. Business clusters in China are unique.

In this paper, it takes a distinctive perspective to explore the reality of business clusters in China. This is determined by the dominant role of state-enterprises, intrinsic culture contributes, the significance of state development zones & agglomeration economics, reegional protectionism and industrial location and distribution system after open-door policy.

2. Insight business cluster in China: a distinctive perspective

2.1Reappraising the role of China's state-owned enterprises for the development of business clusters

The majority of enterprises in business clusters are owned by nonstate owned economies. Wenzhou, Zhejiang Province, the birthplace of China business cluster, for example, has a very small number of SOEs, over 97% of enterprises are privately owned. Unlike Zhejiang Province, Jiangsu and Guangdong centre on the development of township and village enterprises and foreign investment (TVEs) respectively.

All too often, big –bang advocates claim that SOEs in China are especially treated by Chinese authorities and have become a drag on the China economy. For example, SOEs are performed badly in terms of productive efficiency as well as being a drag economy in the sphere of distribution (Sachs & Wing Thye, 1994a; Woo, Hai, Jin, & Fan, 1994). However, some argue that the actual situation is really the opposite (Lo, 1999; Smyth, 2000). At the 15th congress of the

Chinese Communist Party (CCP) in September, 1997, the central government announced the State-owned enterprises reform program known *zhuada fangxiao* (grasp the big, enliven the small). A central platform of such program is enhancing large and medium sized enterprises (LMEs). According to 2006 China yearbook, LMEs are responsible for 75.43% of gross industrial output value. While some are non-state owned firms, most of LMEs are SOEs(Smyth, 2000). Owing to that LMEs has been misrepresented, Smyth (2000) states the logic of China's strategy has been misunderstood. A common approach on evaluation the efficacy of China recent sate sector reform is to take a straight comparison between the performance of the whole state-owned sector and private sector. SOEs continue to absorb more than three-fourths of domestic credit and their borrowing comprises about 60% of the total nonfinancial public debt. Taken together this crowds out investment by nonstate firms which have been the engines of China's growth. Symth(2000) argue such approach is troublesome because it does not take explicit account of the performance of the backbone of China's state owned sector, namely, LMEs. In the year of 1998, key state-owned accounting for 1% of total SOEs, contribute 85% of profits and taxes submitted to the state; 88% of annual industrial growth and 61% of annual sale.

While it is absolutely true that private sector has been growing fast, it often ignores there has been remarkably increasing in upstream industries where large-scale SOEs are dominant (Smyth, 2000). A rapid growth in upstream industries provided the inputs needed to fuel development in downstream industries (Nolan, 1995). Moreover, according to the statement of World Bank (1997), resources maybe be better allocated in private sector. However, one of significant reasons for state sectors losses should deserve closer observation. Losses have concentrated on four industrial sectors—coal mining, oil and gas, textiles and machinery (Smyth, 2000). According to (Lo, 1999), such industries accounted for 54% of total in 1991, and the losses from coal mining, oil, nonferrous metals and military equipment sectors accounted for 90% of central-managed enterprises. In coal mining sector, for example, 85% of output was sold by planned prices, 15% by guidance prices which were two times higher than average planned price, but just 69% of the average market price (Albouy, 1991).

Although the majority of nonstate owned firms could not be allowed directly access to the system of planned materials, the reality that prices are pressed in upstream industries let inputs cheaper in downstream industries and therefore lead to develop in the private sector (Smyth, 2000). Such dual-track system provided nonstate enterprises with access to key raw materials, equipment and markets (Lin, Fang, & Zhou, 1998).From this perspective, large scale SOEs have not diverted financial resources from private sector, to the extent instead have contributed to the impressive growth of the private sector.

Based on the work of cluster researchers, we can conclude that the development of business clusters should benefit from the contribution of LEMs. Nevertheless, the wealth presented below tends to support. At the very least, it provides a fresh viewpoint to the relationship between SOEs and business clusters. From the discussion above, LMEs contributes to nonstate sector economies. In fact, most successful industries clusters concentrate on nonstate sector. That is to say, SOEs also contribute to the development of China business clusters.

The majority of China's business clusters exist in Zhejiang, Guangdong , Fujian , Shandong provinces. Among them, Zhejiang and Guandong provinces are the most prominent in China's business clusters development (Wang, 2006). Meanwhile, due to the dominant of SOEs, it implies that China business cluster should mushroom in the light manufacturing industries, including textile and apparel, footwear, plastics, etc. For example, Wenzhou, is one of the most developed business cluster in China and is famous for its dominate private sector. According to the statistics of the following table, it shows, the business clusters in Wenzhou focus on the light industries.

2.2 The role of culture in the spatial agglomeration of FDI

In the past two decades, China has been quite successful in attracting foreign investment. According to the released data published by the United Nations, China has been the largest FDI recipient among developing nations, and followed the US to be the second largest one all over the world. Therefore, China has been advocated as a magnet for FDI and regarded as the "factory of the world". Market size, low costs of labour, liberalized FDI policy, political stability and improved infrastructure, such factors has been regarded as the attribution to success of China in attracting FDI (Kueh, 1992) . To some extent, while these factors facilitate huge inflows of FDI, less emphasized are China distinctive natural advantages, namely, close cultural ties with emerging regional FDI sources. On the basis of data from Chinese data, much of FDI has come from neighbouring Asian nations. This particular composition of FDI source countries as 'unique' has been noticed (Wei, 1999).

The role of business and social networks in promoting international trade has increasing research interests. In the context of China, although its regulatory framework for FDI has improved gradually since the implementation of open door policy, properties rights and contract laws are still weak and only enforced sporadically present evidence that language and cultural barriers, corruption, and legal uncertainties also present additional difficulties to overseas investors, especially Western ones.

There are approximately 55 million ethnic Chinese living outside mainland China (Yeung & Olds, 2000). Among those,

a large portion of overseas Chinese resides in East and Southeast Asia. In three of the newly industrialized economies, the ethnic Chinese accounts for 99% Taiwan population, 98% Hong Kong and 76% Singapore. Ethnic Chinese usually are taken accounted for distinct social business network which plays an important role in the development of a region (Yeung & Olds, 2000). Such network also extends to other countries such as Thailand, Malaysia, Indonesia and the Philippines.

2.3 Greater China, the significance of State development zones and agglomeration economies

Although, the precise meaning of 'greater China' is not entirely clear, *Business week*, in an article in 10 October, 1988s entitled "Asian's new fire-breather," refers to greater China as the prospective result of " three way economic integration" of mainland of China, Taiwan and Hong Kong, and a more comfortable and apolitical path to reunification than any kind political settlement. On12 June, 1990, the *Los Angeles Times* suggests greater chains as a "superpower on a drawing board", the result of the economic integration and potential political reunification of mainland China, Taiwan, Hong Kong and Macao.

In the past decades, Hongkong and Taiwan entrepreneurial activity has been heavily concentrated in Guandong and Fujian provinces (Ash & Kueh, 1993). In recent years, the continued economic expansion of Hong Kong and Taiwan has been constrained by shortages of land and labour as well as associated pressures on rents and payments (Ash & Kueh, 1993). Therefore, it is important to access to low cost labour and cheap land for Hong Kong and Taiwan entrepreneurs who have re-localized their plants in Southern China.

Lo (2003) suggest that Special Economic Zones and Open Coastal Cities have their competitive edges in attracting FDI although preferential treatment spread throughout China from the south to the north and from the coastal areas to the interior. That is to say, FDI are more likely to agglomerate in such regions. The studies from some researchers have partly explained the reasons. Due to preferential FDI and the establishment of the four Special Economic Zones (SEZs) with three lie in proximate Guandong Province, foreign investment from Hong Kong manufacturing sector, for example, originally commenced in Guangdong with a form sub-contracting and consequently other forms of cross-border including factory relocation aiming at an reduce of manufacturing production costs and keeping its competitive advantages in the international market (Tuan & Ng, 1994). In the year of 1995, with the gravity analysis performed at the macro-level with 19 districts of Guangdong from 1988-1992, the idea of Hong Kong-Pearl River Delta regions core-periphery was first introduced (Tuan & Ng, 1995). A survey study that examines the outward investment activities reconfirms such a diffusion pattern of induced FDI, which illustrates spatial agglomeration in the areas of Pearl River Delta (PRD). Thai is, it implies that geographical boundary of PRD is co-exist with the economic boundary of the Hypothesized Hong Kong-Pear River Delta core-periphery system.

A diffusion pattern of outward investment in a city –suburban relation is suggested to be an economic subsequence of addressing land use pattern (Alonso, 1964). Such significant study with the case of manufacturing enterprises relocation of New York has contributed to the latter research on urban agglomeration economies and diseconomies (Krugman, 1991). In the context of China, FDI flows from Hong Kong (city core) to the sub-urban (PRD) via physical factory site relocation. However, such an evolving process of manufacturing relocation from the city core to its peripheral location between HK and PRD distinguishes from others due to across-custom boundaries. Such a spatial economics point has well represented the approach in "new economic geography" which has been concerned on the significance of agglomeration externalities to explain outward FDI activities (Krugman, 1998).

2.4 Regional protectionism and industrial location

There is a sizeable literature of industrial distribution focus on Europe and the United States, with special interests in the impact of regional integration and trade liberalization on spatial pattern of industries (Sjöberg & Sjöholm, 2004). Under the market economies, three major strands of strands of theoretical reasoning guide these attempts to disentangles various industrial location and geographic concentration: neoclassical trade model, new trade model and new economic geography models (Breschi & Malerba, 2001). The neoclassical trade approach moves form a perfect competition framework, with homogeneous products and non-increasing returns to scale(Kim, 1995). Industrial location is driven by exogenous enduwoments such as technologies and/ or factors determine the location of economic activities. New trade approach claims that internal scale economies facilitate regional incentives to specialize even in a lack of distinction associated with technology or resource endowments, and enhance businesses concentrate their production in some locality. Concentration of economic activities attempts to achieve scale economic, particularly, orientated towards a large consumer market to minimize transportation costs (Krugman, 1991). Brulhart (1998) argues that a reduction of trade barriers makes underlying spatial advantages to play a greater role, bring a trend to promote regional specialization and concentration. The new economic geography literature emphasizes that geographic concentration is driven by the interaction of transportation costs and internal scale economies. Due to demand, a large number of buyers attract a larger number of producers, whereas cost linkages generate incentives for consumers to locate close to suppliers (Krugman, 1991; 1998).

In the context of China, regional protectionism has a significant effect on the degree of regional specialization (Bai, Du, Tao, & Tong, 2004). To some extent, while the benefits of specialization are well understood, a pre-condition for realizing these benefits---namely, free flow of goods and services across regions and countries—is not always satisfied due to possible protectionism at both international and sub-national levels (Bai, Du, Tao & Tong, 2004, p. 398). There is a limited degree of regional specialization and the weak mobility of actors and goods in this nation (Kumar, 1994). Many studies have revealed the various creative actions taken by regional government to keep their production of scare raw materials to themselves or prevent the inflow of goods produced by other regions. For example, nevertheless, observation on unique perspective cannot be understood without reference to a Chinese particularity: the existence of regional protectionism (Brun & Renard, 2002).As result of fiscal decentralization in the process of China's economic reform after 1978, it provides the regional authorities with a strong incentive to protect their tax base by shielding local businesses from interregional competitions (Bai et al., 2004). Furthermore, a absence of an effective promulgation from central government is to prohibit interregional trade barriers (Bai et al., 2004).There is an increasing trend on regional protectionism in China during the period of economic reform especially in the 1980s (Young, 2000). In the mid-1980s, regional protectionism in the form of " trade war" often happened along the boundaries of the various level of administrative regions (Lee, 1998). For example, "wool wars" break out in the wool-producing regions in Gansu, Inner Mongolia, Ningxia, Qinghai and Xinjiang in 1985. Aiming at satisfying local demand by local production, the government agents controlled imports by establishing and implementing quotas (Brun & Renard, 2002). As a result, for example, the wool price in Xinjiang in 1987 rose to 24 RMB per kilogram. With an increasing price, wool producers in this region were not allowed to deliver wool out of the autonomous region unless the tea and native products firms and the industrial and commercial bureaux, both at county level, had certified that these producers had carried out the procurement obligations in the first place, followed by an endorsement by the autonomous (provincial) administrative area's tea and native products, leather , textile firms and after paying a 20% pasture construction fee. To some extent, still in this autonomous region, the authorities restricted in the inflow of a total of 48 types of commodities to the region (Lee, 1998). Meanwhile, regional authorities also tend to have incentives to protect local state-owned enterprises under their administration, which are their foundation of power, their source of regional benefits as well as fiscal revenue (Bai et al., 2004).

Since the 1990s, many studies have investigated the driving force of the role of regional protectionism behind industry location in China (Young, 2000).During the period 1992-1997, the impact of regional protectionism on the lovation of economic activities is significant to the provinces are less outward internationally (Battisse, 2002). Battisse (2002) argue that provincial authorities in provinces characterized by low advancements in reforms, weak liberalization and low degree of international openness have given priority to priority to upward vertical integration of production without consideration for prospects of goods produced. Such claims are coherent with the evidence of reduction in regional specialization in China (Battisse, 2002; Young, 2000). To some extent, these evidence that there is a negative relation between concentration and value-added growth of Chinese industries and of reduced regional specialization in a tendency of rapid global opening and liberalization.

2.5 Distribution system of China's business cluster

As for the issue of upgrading low-income countries' business clusters, the role of global value chain has been emphasized for at least two decades. In contrast to traditional approaches, which pay greater attention to the local interaction between businesses and institutions, the global value chains concerns clusters' linkages with extern world even more. Due to the tendency of economic globalization, it is commonly considered that business clusters in low-income economies are able to upgrade themselves only when they are involved in the global production and distribution network controlled by multinational firms. However, the growth path of some Chinese clusters indicates disparate theoretical model.

Pre-1978, governmental control is against which ongoing distribution reform should be considered. Before economic reform, production and distribution were governed by Soviet-style central planning, with market forces playing a minimal role (Taylor, 2003). Broadly speaking, the distribution network can be divided into three tiers: wholesalers at the first level were located in four big scale cities (Beiing, Guangzhou, Shanghai and Tianjin), Beijing, Guangzhou, hanghai and Tianjin; their counterparts in the second layer were placed in provincial capitals and other medium-sized cities, and distributors on the lowest rung operated from smaller cities and towns (Taylor, 2003). Such distribution system led to that not only no attempts were made to improve products and service quality, but also little or none competition form overseas products.

Post-1978, Chinese central government in 1986 decontrolled the distribution system and permitted producers to sell directly to retailers aiming at introducing market-driven incentives. However, despite state's monopolies and rigid hierarchical structure have been eliminated, its system still remained. Hence, it is increasing in potential competition with private distributors (Baldinger, 1998). In contrast of most of low-income industries where have difficult in constructing distribution system specific to small businesses and the limitation of the size of the domestic market (K.

Ding, 2006), the function of distribution system for business clusters in China must be classified first.

3. Conclusion: Political economy of domestic fragmentation -a new look of business cluster in China

Such unique Chinese experience above leads to a special domestic fragmentation of cluster spatial distribution in China: business clusters are not uniformly distributed across China. Most of them exist in the South-eastern costal regions, mainly concentration in the Pearl River Delta, Yangzi River Delta and the Bohai-rim region. There are significant growth differences between coastal and interior provinces and across industrial sectors in China. These provincial and industrial disparities are result in not only by historical and geographical factors but also by political strategies that appear from the high degree of involvement of the governmental in business activities.

Although the economic landscape of regional integration has important roles on efficient resource allocation and regional economic development, compared to the states of the US, Chinese provinces are less integrated with each other. Provincial autonomy was regarded as an unique characteristic before economy reform. In the period of pre-reformed economy, China has long been regarded as truly a central planned economy in the same sense as the former Soviet Union. According to, there were only about 500 commodities under mandatory planning in contrast to with 20,000 in the former USSR, and provincial authorities took the primary role in formulation and interpretation of plans. However, some researchers still argue that China's duplicative domestic market referred to as cellularized along the provincial borders.

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Branding Cultural Festival as a Destination Attraction:

A Case Study of Calabar Carnival Festival

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Abstract

The study attempts to develop a normative model for the branding of cultural festivals. This is because present methods of analyses and the rules are inconsistent and elusive. The study seeks therefore to extend the literature on cultural festivals branding by proposing a normative model of branding process that is linked to the service concept and mediated by demographic and behavioural variables. The study investigated cultural festival attributes that are explanatory of brand association and on the bases of this proposed a model that simplifies the process of branding of cultural festivals using cluster and discriminant analysis. A convenience sample of 500 attendees drawn from the 2007 Calabar Carnival Festival was used for the study.

Keywords: Branding, Cultural festival, Carnival, Tourism, Destination, Marketing, Attraction

1. Introduction

There is a consensus that every organisation needs to develop strong brands as an essential part of its business strategy. The precise means of carrying these out are characterised by conceptual ambiguities (Kay, 2006).

There is a large array of methods and rules of branding in marketing literature. However, these methods of analyses and the rules are inconsistent and elusive (Kay, 2006). It is even more complex when one considers the branding of cultural festivals. It is inconsistent because the success stories of strong brands carried in marketing literature reflect the outcome of different approaches and different management principles. The branding of cultural festival is perceived to be even more complex because of peculiarities of cultural festivals compare to conventional services such as banking, telecommunication, automobile repairs, education, health care, etc. This means that there is no single approach to developing a strong brand. Kay (2006:472) cited Aaker (1996) who asserted that "developing the strength of a brand is not deemed to be easy". The question then is what is the best approach to branding? In response to this question, Kay (2006) challenged marketers to evolve alternative methods that are consistent and without contradictions. This paper is a response to this assertion.

There is copious literature on branding process of consumer goods in marketing text books, but scanty in the case of research outcomes in journal articles. The common models of branding (Aaker Model, Brandz Model and Resonance Model) do not show the methodological sequence of the process. The common feature is the mention of brand equity drivers and effect on firm performance. It is these methodological inadequacies that motivate the authors to advocate for a process that will begin by identifying the brand attributes from customer perspective. This is contrary to what is found in most existing marketing literature. The major objective of this study is an attempt to develop a normative branding model for branding using a cultural festival. Secondly, to develop a scientific process for branding that will begin by identifying the brand attributes of the festival. Brand attributes are theoretically linked to the service concept: core attributes and the peripheral attributes of the product service (Anderson, Pearo & Widener, 2008). The relevant attributes will be generated through a research process. The core attributes refer to what the brand delivers or intends to deliver. The peripheral attributes is made up of the physical and interactional components. It refers to how it is delivered. The physical attributes include environmental, mechanical, and inanimate components of the service delivery. The interactional attributes include all aspects of the interpersonal encounters provider by the service providers.

A destination according to Jayswal (2008) "is a town, city or a place which has one or more attractions for tourists". These may be in the form of scenic sights, culture, leisure activities, shopping rebates, food and excursion, etc. The relationship between destination image, event and tourists visit has been established. It is believed that the benefits tourist enjoyed from an event is transferred to the host destination (Meyvis & Janiszewski 2004; Supphellen, Eismann & Hem, 2004). When an event is properly branded, it has the potentials of contributing to the host destination as a feature (attraction) to make the destination unique in nature and even popular to prospective visitors. This has motivated the authors to seek for a simple industry friendly branding process that will facilitate the branding of cultural event, so that at the long-run the event will serve as a promoter of the destination.

There are numerous cultural festivals in Nigeria, but only few of them are touristically developed and marketed. These include Agungu Fishing Festival, Osun Oshogbo Festival, Calabar Carnival Festival, Abuja cultural Festival, etc. The results of this study would help the marketers of cultural festivals and Destination Marketing Organisations (DMO) in Nigeria in developing strong brands, segmenting cultural festival markets and the targeting of identified and selected markets with brands that are produced through a simple and effective branding process. The following hypotheses would serve as the basis of the conceptual branding process proposed by the authors.

(1) Attendees' perceptions of branding attributes differ significantly on the bases of customer segments.

(2) The customer segments are significantly related to cultural festival brand associations.

(3) Customer segments differ significantly on the bases of demographic variables of cultural festival attendees.

(4) Customer segments differ significantly on the bases of the behavioural variables of cultural festival attendees.

2. Theoretical background

2.1 The concept of branding

A brand is an identifier. It identifies a firm and/its product or service by the use of name, distinctive symbol which differentiates it from other competing firms, products or services in a given market. Branding refers to all the processes and activities involved in creating a brand. Kotler and Keller (2006:275) define branding as "endowing products and services with the power of a brand". According to them, a brand is a "perceptual entity that is rooted in reality, but reflects the perception and perhaps even the idiosyncrasies of consumers".

Branding is characterised by different approaches. Some of the common activities involved in branding process are determining a brand personality, brand positioning and brand identifiers (brand drivers). Brand personality refers to the specific mix of human traits that are attributed to a particular product or service.   There is a general agreement that brands are endowed with personalities and that consumers have the tendency of choosing brands whose personality fit their own. Aaker (2004) identifies four brand personalities and these include – sincerity (down to earth, honest, wholesome and cheerful); excitement (daring, spirited, imaginative and up-to-date); competence (reliable, intelligent and successful); ruggedness (out doorsy and tough). Kotler and Keller (2006) suggest that brand personality can be built on product features, service and/or image or a combination of any of these two associations. They identified seven common personality traits which include self-confidence, dominance, autonomy, defense, sociability, defensiveness, and adaptability.

Brand positioning refers to how the brand is placed in the minds of the consumers.   Positioning takes the images and shows how the brand personality compares to other competing product or service (Chacko). Brand identifiers or elements are those drivers that serve to identify and differentiate the brand.   Brand identifiers are categorized into three: brand (brand name, logos, symbols, character, spokepeople, slogans, jingles, pages, and signage); the product (service and all accompanying marketing activities and supporting marketing programmes); and other associations indirectly transferred to the brand (a person, place or thing).

2.2 Cultural festival branding

There is plethora of literature on destination branding (Nickerson and Moisey, 1999; Echtner and Ritchei, 1993; Gartner, 1993; Baloglu and Brinberg, 1997; Henderson, 2007, Brent et al, 1998), but almost a total absence of study on cultural festival branding. Hankinson (2004) observes that brand was once assigned to consumer goods, but are now applicable to place and/or attraction.

To gain insight and understanding of festival branding, we shall draw from related studies on destination branding. This is because; cultural festivals are destination attractions and inadvertently share some attributes that influence visitors' decision to visit such destinations. Destination is the place where the attractions and hospitality are found (Cooper et al, 2005).

Blain et al (2005:337) define destination branding as:

"a set of marketing activities that (1) support the creation of a name, symbol, logo, word, mark or the other graphic that readily identifies and differentiates a destination. (2) consistently conveys the expectations of a memorable travel

experience that is uniquely associated with the destination, that (3) serve to consolidate and reinforce the emotional connection between the visitor and the destination and that (4) reduces consumers search costs and perceived risk. Collectively these serve to create a destination image that positively influences consumer destination choice".

This definition is comprehensive. It can be adopted for a description of cultural festival branding. This can be achieved by juxtaposing "cultural festival" where there is "destination" in the definition.   The definition contains brand drivers as outcomes of marketing activities, benefits of branding and most importantly points to the relationship between destination image and consumer choices.   Cultural festivals are tourists' attractions which take place in tourists' destinations.   In this vein, cultural festival branding refers to the set of marketing activities involved in differentiating a cultural festival from competing festivals by use of name, marks, words, symbols, product or service, etc. thereby building a positive image of the festival in the minds of the consumers and ultimately consumer choice.

2.3 Branding attributes of cultural festivals

A review of literature shows that so much has been done in the area of attributes of tourists' destinations branding. These studies give us insight into the attributes of cultural festival branding. Gartner (1993) observes that destination image comprises of hierarchically interrelated components – cognitive, affective and conative. Echtner and Ritchie (1993) believe that a destination image involves features such as mountains and feelings or attributes such as friendly people.   Baloglu and Brinberg (1999) found that the affective images of tourism destination countries varied across both positive and negative (sleeping, glooming, unpleasant and distressing) dimensions.   Nickerson and Moisey (1999) argue that it is difficult for a marketer to provide an image such as relaxation, pleasantness, a challenging experience or something inspirational that would be interpreted in the same way by all potential visitors. They warned that portraying feelings and emotions in destination marketing campaign will certainly capture some of the consumers, but may inadvertently turn other people away.   It was suggested that rather than attempting to portray a "place" through the photograph, it may be more advantageous to provide a visual image of a feature such as a mountain and allow the consumers to determine what feeling the mountain provides.

According to Crompton (1979), the concept of destination image is multidimensional, with cognitive and affective spheres and had been defined as an amalgam of the knowledge, feeling, belief and opinions, ideas, expectations and impressions that people have about a named location. Gunn (1988) suggests that there are two types of image creation outcomes – organic and induced.   The organic image is created and founded on information sources such as the media, popular culture and schooling, while the induced images are a consequence of exposure to advertisement and guidebooks.   Imagery or visualisation refers to consumers' attempt to construct an image of an event in order to estimate its likelihood or its goodness/badness.   When consumers visualize an event, the event seems more likely because consumers exhibit a positivistic bias when they image themselves using the product or attending the event (Hoyer and McClnnis, 1997). It does appear that most of the studies in destination branding are in agreement that destination image should form the bases of a destination branding.

The cultural festival branding attributes is theoretically linked to service concept models (Anderson et al, 2008). For example, in cultural festival, the attributes of the bands and floats form the core service attributes of the carnival. The attributes of the place (destination) where the event is staged are regarded as peripheral attributes. The ambience of the environment, facilities, infrastructure, and presence of signage are a few examples of physical attributes of a cultural festival. The interactional attributes of a cultural festival can be defined by the attitude of residents toward tourism development and visitors to the event.

2.4 Empirical evidence of branding on performance

Thompson (2003) from his neurological studies of brands (neuro-markets), gives brand managers new evidence of the power of brands.   He found that when consumers are aware of a brand during a consumption experience, the brain scans revealed significant neurological responses. Brain imaging revealed substantial difference in neurological responses between products that were branded in comparison to similar consumption experiences in which consumers were unaware of the brand.   It is believed that consumers react differently to consumption of products when they had knowledge of the brand.   Brand knowledge affects product preference or product choice.

Nowak et al (2006) observe that positive emotions, product quality, fair pricing, service quality, and customer commitment are predictors of brand equity.   The study found that of all five attributes, customers' commitment has the highest predictive power.   Nickerson and Moisey (1999) observe a significant relationship between destination attributes and recognition of destination by identified market segments.   They further found that different market segments are more influenced by different features of a destination using different promotional campaigns.   Hunt (1975) asserts that awareness is essential to tourism destination successes and competitiveness in the market place.   He identified image as a critical factor in promotion strategy and that all places have images – good/bad and indifferent that must be identified and either changed or exploited.   Henderson (2007) in "branding of Singapore" used the following attributes for analysis – product (lots to do, cultural diversity, cosmopolitan, world class infrastructure); delivery

(accessibility, efficient friendly, and safe); experience (at ease, stress-free, welcome) and end benefit (fulfilling, satisfying, enjoyable, rewarding and enriching). Studies have also shown the inter-connectedness of destination image and destination brand identity in the minds of tourists and mechanism of marketing (Cai, 2002).

3. Methodology

3.1 Background on the study area

The Calabar Carnival Festival is a brand organised and marketed by the Cross River Carnival Commission (CRCC). CRCC was established by the Cross River State Law Number 4 of 2006. It is "a body corporate" with perpetual succession and common seal and has power to sue and be sued in its corporate name. The festival is a product mix of the Cross River Christmas Festival. The carnival festival has five costumed Bands with different philosophical themes. The Bands and their pioneer leaders are:

(1) Bayside Band – Donald Duke (Former Governor of the State)

(2) Freedom Band – Captain Henry Briside

(3) Master Blaster Band – Chief Gershom Bassey

(4) Passion 4 Band – Mr. Christ Agibe

(5) Seagull Band – Senator Florence Ita Giwa

The Calabar Carnival Festival has had three editions (2005, 2006, and 2007). The objective of the festival is to among other things, promote the indigenous local and cultural heritage of the people in the visual arts, dance, arts and craft, indigenous music folklores, folksongs, etc. Cross River State is one of the 36 States of Nigeria and is in the South-South Geopolitical Zone.

3.2 Research design and sample size

A cross sectional survey design was used for the study. Attendees were intercepted along the carnival route. The study took place on the 27th of December, 2007, being the third edition of the Calabar Carnival Festival. Samples of 500 spectators were surveyed. The sample was drawn using convenience sample design. Convenience sample is most appropriate for a carnival event because spectators are highly in transit and there is complete absence of a sampling frame.

3.3 Variables measurement

From relevant literature reviewed by the researchers, nine service quality variables of carnival festivals were considered for analysis. The nine variables are conceptualised as cultural festival branding attributes. The variables include event organisation (planning and co-ordination of event, event management, band composition , band costumes, dance, music and themes); promotion (creation of awareness about the event on national and international media); facilities (telephone services, transportation, computer services, accommodation); friendly locals; shopping (availability of shopping centers for attendees during event); refreshment and food (availability of restaurants and fast food places); ambience of the environment (signage, cleanliness, greenness and orderliness of the city hosting the festival); and safety and security (absence or minimal criminal activities or lawlessness). These variables were designated as cultural festival branding attributes.

Respondents were asked questions on the importance of each of the branding attributes in their decision to attend event, with "1" as not important and "5" as very important. Questions were also asked on attendees' demographic profile (gender, age, nationality, family monthly income, educational status) and behavioural characteristics (purpose of visit, number in group, group membership, mode of transportation to event, source of information, type of accommodation use). The validity of the instrument was enhanced through intensive scrutiny by three members of the Cross River Carnival Commission. Their contribution helped to strengthen the validity of the instrument. Reliability of the instrument was achieved by the use of Tourist Style Scale adapted from previous related studies (Henderson, 2007; Nowak et al, 2006).

3.4 Data collection and analysis

A structured questionnaire was used as the research instrument. The self administered questionnaire was administered on carnivalists who were engaged in the festival as spectators and found along the carnival route (Esuene Stadium, through Mary Slessor road, through Ndidem Usang Iso road, through MCC road, through Murtela Mohemmand Highway and back to the Stadium). A total of 417 copies of questionnaires were used for analysis after discarding the ones that were not properly filled. The sample consists of residents, day trippers and overnight visitors.

The Statistical Package for Social Sciences (SPSS) was used in data analysis. Descriptive statistics was used in calculating the mean importance of branding attributes. The Ward's Hierarchical Clustering Method with Squared Euclidean Distance was used to generate clusters of customer segments of attendees (Hair, Bush and, Ortinau, 2006).

Discriminant analysis was used to find the predictive power of the festival attributes. From methodological point of view, the discriminant analysis is one of the statistical methods applied in various studies of typology of buyers and buying actions. This was done by using the clusters (non-matric) as the dependent variable and the attributes as independent variables. Chi-square statistics was used to determine if there were significant differences between the clusters and the attendees' demographic and behavioural characteristics.

4. Results

4.1 Demographic characteristics

The sample has more males than female attendees (male, 72.84%; female, 27.17%). 85.2% were domestic attendees, while 14.9% were international attendees. Out of the 62 foreigners in the sample; there were more attendees from other African countries (33.9%). The age distribution shows that those within the age range of 40-49 (39.8%) were more in attendance. The data shows that they were more professionals followed by business persons. The income distribution shows that those who earned more than ₦100, 000 ($741) per month were more in attendance. Those who hold higher degrees were 39.1% and 33.1% for those with first degree. See table 1.

4.2 Attendees behavioural characteristics

The study elicited some behavioural characteristics of attendees. These include, reason for visiting, mode of travel, group membership and sources of information. The data shows that most of the attendees were at the carnival route because of the event (39.1%). On the mode of travel to the venue of the event, most of the attendees accessed the event venue by private cars (43.9%). From a list of six information sources, those who had know about the event were more in number, followed by those who got the information through television. To measure the level of spectators' attachment to event, respondents were asked whether they attended event last the previous and if they would attend the next year. Most of the respondents said they attended event last year. See table 2.

4.3 Inferential statistics

H₁: Attendees' perceptions of branding attributes differ significantly on the bases of customer segments.

To determine attendees' perception, respondents were asked to rate the importance attached to each of the nine branding attributes in their decision to attend the festival (organization, promotion, shopping, facilities, refreshment and food, friendly locals, infrastructure, ambience of environment and safety and security). To establish if there exist differences in attendees' perception of the importance of each of the attribute and customer segment, cluster analysis was performed. The respondents were clustered on the basis of the mean score on the attribute- importance scale.

The cluster analysis produced two clusters. Several clusters of the attendees' perception were done, but only the two cluster operation appeared to produce a result most suitable for this study. It was found that above two clusters, there tend to be very small representation which makes the clusters unreasonable for market analysis. To determine the importance of each attribute as expressed by respondents in each of the two clusters, Analysis of Variance (ANOVA) was conducted. The result of ANOVA shows that all nine attributes contribute in differentiating the clusters (p < 0.001) as shown in table 3. This finding supports the hypothesis that seeks to establish if there exist significant difference between attendee's perception of branding attributes and customer segments. Secondly, accompanying descriptive statistics shows that in cluster one, all the attributes scored above average. Promotion had the highest mean score, while infrastructure had the least mean score. Respondents in cluster two rated branding attributes much higher than those in cluster one, except for infrastructure which was score below average (1.52). A comparison of the two clusters revealed that cluster one had 63% of the sample, while cluster two had 37%. Because cluster two had higher mean score on all attributes (except infrastructure) it indicates high customers' requirements. Attendees in cluster two are not infrastructure based, but showed high sensitivity to the other eight attributes. Cluster two was therefore christened 'Active Carnivalists'. Respondents in cluster one attached moderate importance to branding attributes. This is because the attendees scored attributes much lower than those in cluster two and showed much more concern for infrastructure at the destination. Cluster one was therefore christened 'Ideal Carnivalists'. See table 3.

H₂: The customer segments are significantly related to cultural festival brand associations.

Brand associations are operationally define as those brand attributes that the attendees considered in their choice set. Discriminant analysis was used to establish the relationship between customer segments and brand associations. Conceptually, brand associations are those cultural festival attributes with high predictive power. The result of discriminant analysis shows a very high discriminant function. (Wilk's Lambda of 0.000) and the predictive accuracy is of 94.5 percent. This signifies that the cluster membership is correctly classified and excellently predicted. The Structure Matrix as shown in table 4 shows the predictive power of each of the branding attributes. To select attributes with high predictive power, Hair et al (2006), advised that the numbers in the function column that are .30 and above are usually considered. In this study, attributes with the highest predictive power are facilities, (0.464), refreshment and food (0.447), safety and security 90.438), organization (0.337), and friendly locals (0.314). These attributes represent

the brand associations. This finding supports the assumption that there is a relationship between the customer segments and brand associations.

H$_{3a:}$ *Customer segments differ significantly on the bases of demographic variables of cultural festival attendees.*

H$_{3b}$ *: Customer segments differ significantly on the bases of the behavioural variables of cultural festival attendees.*

The result of Chi-Square test shows that there is no significant difference in the perception of customer segment in terms of demographic variables of attendees. The cross tabulation method shows that all the demographic factors were not significant at $p < 0.05$. This means that attendees in each segment have approximately the same demographic profile (gender, age, income employment status, educational level and nationality). This finding did not support H$_{3a}$. Significant differences were observed in attendees perception of festival attributes in terms of some behavioural characteristics: group membership (X^2, $p < 0.05$), purpose of travel (x^2, $p < 0.00I$), sources of information (x^2, $p<.05$), past experience (x^2, $p < 0.05$) and repeat visit (x^2, $p < 0.001$). Tourists' perception in the two customer segments did not show any significant differences in terms of accommodation type, night spent in destination. This means that tourists in each of the segments have approximately the same distribution with respect to accommodation type and nights spent. This finding supports H$_{3b.}$

There were more respondents distributed across cluster one than cluster two. In terms of travel motive, majority of respondents who attended event with the purpose of also seeing friends / family, vacation, and business were found in cluster one, while majority of those whose motive is only the carnival (51.8%) are in cluster two. In terms of mode of travel, there were more of those who used private cars, rented car, taxi, buses and bikes in cluster one and more of those who used airplane and trekking in cluster two. See table 5.

5. Discussion and implication of findings

It has been pointed out that existing marketing literature is lacking in the development of simple and scientific branding process despite many decades of the popularity of the concept (Kay, 2006). The model formulation is guided by the result of hypotheses tested in this research. The result of the first hypothesis shows that attendees' perception of branding attributes of cultural festival differ between market segments. Because of the diversities in the cultural festival market, attributes of events are perceived differently by different market participants. The attributes with high mean importance and that enjoy statistical significance were included in the preliminary list or consideration set. Those without statistical significance were discarded from further analysis. However, in this study all nine attributes show significance difference. The marketing concept gives impetus to this approach because the identification of relevant market segments gives deeper understanding of the market characteristics and visitors in the the different markets. The branding attributes are a combination of the event attributes and place attributes. The identification of two typology of carnivalist will enhance effective target marketing by brand managers. The Active Carnivalists are few but exert more pressure on event organizers and Destination Marketing Organisation (DMO) and may likely have implication for competitive sustainability of the destination.

The brand associations are identified by their predictive power. The brand attributes with high predictive power were captured and used to form the brand identifiers. The brand personality is also generated from the brand associations. Studies have confirmed the relationship between brand associations and brand equity (Nowak et al, 2006). The Calabar Carnival brand associations include facilities, refreshment/food, safety and security, organization and friendly locals. The brand position statement is composed after identifying the brand associations of the festival. It is only those brand associations that have high predictive power that should be used to form the brand positioning. In order word, provide an image that will evoke those characteristic and associate those attributes with the festival. It is similar to the unique selling position (USP) that sells a product or service. Brand is a promise that the product or service would deliver the expected benefit (Kotler and Keller, 2006). In the same vein, the brand position statement is akin to a promise that the festival would offer certain benefits to visitors. The brand position statement is encoded and transmitted as brand identifiers or drivers. This is the branding activity that is most obvious to marketing professionals and non professionals.

The fact that none of the demographic variables show significance between clusters means that they have no mediatory effect on the perception of attendees to the cultural festival and should not form the basis of branding. The behavioural variables (group composition, travel motive, mode of transportation, source of information and previous experience) that show significant dependence have mediatory effect on the perception of cultural festival attendees. The implication is that the brand drivers such as logo, brand name, jingles, signage slogans, etc. are more effective if such variable are take into consideration when designing and developing the media that will convey the brand associations and personality to the consumers in the selected market segments. The conceptual model has six components:

Component 1: Identification of brand attributes. Sources of attributes include survey of literature, the marketers' past experience, expert opinion, focus group discussion, etc.

Component 2:   Measure the mean importance of festival attributes and establish differences between market segments using a statistical tool (ANOVA).

Component 3: Capture the predictive power of festival branding attributes to ascertain their influences on visitors' decision to attend a festival.

Form brand associations and brand personality using attributes with high predictive power.

Component 4: Analysis of target markets to measure mediatory role of demographic and behavioural characteristics on attendees' perception by market segments.

Component 5: Prepare a brand positioning statement for each target market base on findings in component 3 and 4.

Component 6: Creatively select brand drivers.   The common brand drivers include slogan, single, logo, brand names signage, etc. It is these drivers that transmit the brand associations and positioning to the selected markets.

The brand driver used by the Calabar Carnival is a logo. The logo has a distinctive symbol showing a lady with two colourful stretched-out wings. The slogan is, "celebrating our heritage through culture". The logo does not carry any brand associations. This is probably because the brand managers did not establish the brand associations before attempting to brand the carnival. From the analysis of attributes, the Calabar Carnival Festival conveys the following images: well attended and promoted cultural festival; a friendly and hospitable people, beautiful drama, glamour resulting from the organisation (well organised), refreshing experience that makes one want to stay longer because of the   cuisines (gastronomical).

The paper is concerned with the process of branding, since it is said that the "the means justifies the end". The authors argue that a simple and scientifically, based process of branding festival and by extension other services is likely to impact more on brand equity. This model could be adopted and extended to consumer and industrial goods. The replicability of the process is accounted for by the general scientific principles involved in the model development.

6. Conclusion

Branding of cultural festival is a relatively new domain of marketing. This is because branding was in time past more commonly associated with consumers goods. But with the increased interest in place and event marketing, it has become an imperative for academics and practitioners to develop simpler and theory based methods of branding cultural events. The methodology presented in this study, to a large extent would reduce the difficulty and complexity encountered by cultural festival brand managers.   This approach is different from the suggestion by Nickerson and Moisey, (1999), that only features should be used in branding a destination and by extension cultural festivals. The use of statistical tools to establish brand associations upon which the brand personality and positioning are built makes this model scientific and theory based.   It is hope that, if cultural festivals are properly branded by organisers and Destination Marketing Organisations (DMOs), positive brand building attributes will be transferred to the destination, thereby increasing the overall brand competitiveness of the festival and destination and ultimately led increase in visitors' arrival and revenue receipts. A poorly branded event would also transfer negative branding attributes. A well branded event has the advantage of co-branding itself and the destination, hence the need to brand cultural festivals as destination attractions.

The major limitation is the fact that the attributes used for investigation are drawn from literature search. It is suggested that more attributes should be considered during the attributes-importance measurement stage. The attributes could be generated from a focus group discussion. It should also involve different cultural festivals, other than carnivals suggested. Secondly, it is suggested that, there is strong need for a study to analyse factors that influence marketers' choice of cultural festival brand drivers and their effectiveness on brand equity. This is to enhance the match between brand associations, brand personality and the medium that would convey the message that will evoke a corresponding image.

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Table 1. Demographic profile of attendees

Gender	Male, 72.84%; female, 27.17%
Nationality	Nigerians, 85.2%; foreigners, 14.9%
Continent of foreigners	Other African countries, 33.8%; North Americans, 22.6%; Europe, 19.4%; Oceania, 6.5%; Asia, 12.8%; others, 4.9%
Spectators group type	Alone, 29.3%; friends, 20.4%; family, 33.7%; friend/family, 11.3%; business associates, 4.1%; government delegates, 1.20%
Number of people per group	One, 11.3%; two, 18.3%; three, 25.0%; four and above, 14.2%; N.A, 31.2%
Age	20-29, 25.7%; 30-39, 39.9%; 40-49, 21.9%; 50-59, 6.7%; 60-69, 1.7; > 60, 4.1.
Educational level of spectators	No formal education, 3.4%; partial education, 0.9%; complete primary school only, 0.4%; finished secondary school, 7.5%; diploma/certificate, 10.8%; first degree, 33.%; higher degrees, 39.%; others, 4.6%
Employment status	Unemployed, 6.0%; self employed, 8.7%; students, 9.1%; retired, 4.8%; unskilled/labour, 5.0%; sales/marketing, 5.5%; civil/public servants, 15.9%; business persons, 18.7%; professionals, 21.1%; artisans/technicians, 1.8%; others, 3.4%
Monthly Income	<N10,000, 9.3%; 10,000-20,000, 5.0%; 20,000-30,000, 8.2%; 30,000-40,000, 8.9%; 40,000-50,000, 6.5%; 50,000-60,000, 7.7%; 60,000-70,000, 2.6%; 70,000-80,000, 5.0%; 80,000-90,000, 5.3%; 90,000-100,000, 7.0%; >100,000, 24.9%; N.A, 9.6%

Table 2. Behavioural characteristics of attendees

	Number	%
Reasons for visiting		
Carnival	16.3	39.1
Visit family & Friend	175	42.1
Vacation	21	5.1
Business	21	5.1
Others	36	8.6
Mode of Travel		
Private car	183	44.0
Rented car	18	4.3
Air plane	81	19.4
Taxi	31	7.4
Bus	41	9.9
Bike	33	8.0
Trek	7	1.7
Others	22	5.3
Information sources about event		
Word of mouth	69	16.6
Known about at	157	37.6
Newspaper/ magazine	9	2.3
Television Adverts	105	25.3
Radio	32	7.7
Internet	33	7.9
Others	11	2.6
Previous experience		
Yes	-	64.3
No	-	31.7
I don't know		4.0

Table 3. Mean importance of branding attributes by clusters

Branding attributes	Ideal Carnivalist	Active Carnivalist	F	Probability
Organisation	3.83	4.63	67.605	.000
Promotion	4.18	4.69	33.602	.000
Shopping	3.22	3.82	244.888	.000
Facilities	3.20	4.35	130.643	.000
Refreshment/food	3.35	4.48	121.334	.000
Friendly locals	3.75	4.52	59.378	.000
Infrastructure	3.79	1.52	206.045	.000
Ambience of environment	3.80	4.45	44.499	.000
Safety and security	3.58	4.59	115.591	.000

Significant at p<.001

Table 4. Structure matrix showing predictive power of festival attributes

	Function
	1
Infrastructure	-.586
Facilities	.464
Refreshment/food	.447
Safety/security	.438
Organisation	.337
Friendly locals	.314
Ambience of environment	.272
Promotion	.235
Shopping	.204

Pool within – groups correations between discriminating variables and standardized canonical discriminant functions Variables ordered by absolute size of correlation within function.

*Note: Only attributes with 0.30 were considered as having high predictive power

Table 5. Differences in tourists' perception of event attributes between clusters in terms of behavioural characteristics.

Variable	Clusters		X^2	Cramar's	df	Significant
	1	2				
Group membership **						
1	62.2	37.8	78.940	0.17	4	0.0096
2	61.6	38.4				
3	69.1	30.9				
>4	81.8	18.2				
Travel motive *						
Carnival	48.1	51.9				
Visit friends/family	74.1	25.9	31.241	.281	5	0.000
Vacation	52.6	47.4				
Business	65.0	35.				
Other	100.0					
Mode of travel x**						
Private car	65.1	34.9	20.267	0.226	7	0.005
Rented car	64.7	35.3				
Airplane	46.9	53.1				
Min taxi	66.7	33.3				
Bus	68.3	31.7				
Bike	70.0	30.0				
Trekking	33.3	66.7				
Accommodation type						
Hotel	61.7	38.3	11.451	0.170	7	0.120
Motel	75	25				
B/B	53.3	46.7				
Home steed	72.7	27.3				
Friends / Family	72.8	27.2				
Holiday home	62.5	37.5				
Others	36.4	63.6				
Night spent						
1.4	67.4	32.6	6.324	0.199	5	0.276
5.8	76.7	23.3				
79	80	20				
Source of information **						
Word of month	76.1	23.9	14.420	0.191	7	0.044
Know about it	61.4	38.6				
Newspaper / magazine	77.8	22.2				
Television adverts	61.0	39.0				
Radio	46.9	53.1				
Internet	57.6	42.4				
Past experience **						
Yes	56.9	43.1	12.592	0.178	4	0.013
No	74.0	26.0				
Repeat Visit *						
Yes	57.4	42.6	20.173	.226	4	0.000
No	85.2	14.8				
May be	83.1	16.9				

Significant at *p = 0.001 and ** p<0.05

Risk Management for Overseas Development Projects

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Abstract

This paper identifies and assesses unique risks faced by overseas development projects in three aspects: political risk, economy/financial risk, culture risk. Response strategies are recommended to these risks. The paper also briefly discussed some integrated risk management models proposed by researchers to manage risk for overseas development projects.

Keywords: Risk management, Overseas development projects

1. Introduction

Overseas development projects, like any other projects, are risky. Besides the typical risks that domestic projects face, overseas development projects have unique risks. Furthermore, they are observed to have more risks and tend to have a high possibility of loss/failure (Han et al, 2007).. This is because overseas development projects are exposed to a global marketplace, in which currently sufficient information is not available but numerous uncertainties need to be considered (He, 1999).. For this reason, on one hand, risk management is becoming more emphasized in overseas projects. On the other hand, risk management is much hard in overseas development projects.

According to El-Sayegh (2007, cited Wang et al, 2004)., risk management is a formal and orderly process of identifying, analysing and responding to risks throughout the lifecycle of a project to obtain the optimal degree of risk elimination, mitigation and control. One of the most important steps in project risk management believed by many authors is the identification of risks. Once risks have been identified, it is possible to adopt action to address it (Kayis and Ahmed, 2007).

Accordingly, this paper is intent to identify and assess unique risks faced by overseas development projects and the response strategy to these risks. The paper also briefly discussed some integrated risk management models conducted by researchers to manage risk for overseas development projects.

2. Unique Risks Faced by Overseas Development Projects

2.1 Overview of Unique Risks in Overseas Development Projects

Compare with domestic projects, overseas development projects have some unique risks. A number of researches have reported different risk category that overseas business faced. Miller (1992). claimed that overseas business is facing five types of international risk: natural, societal, legal, political and governmental. Khattaba, Anchorb and Daviesb (2007). contend that political risk, in its wider context, should contain societal and legal risks. Therefore, the classification of general types of risks in international business can be reduced to four main types: political risks, financial risks, cultural risks and natural risks. However, there is not a universal category of risks in overseas business (Nawaz and Hood, 2005).. This is because that similar project may have totally different risk characteristics in different countries as the economic, political, social and cultural conditions are different.

2.2 Political Risk and Response Strategy

In business, there are various definitions to political risks. Among these, Howell (2001). 's definition is regarded as the representative. He defines political risk as political decisions, political events or societal events in a country will impact the business climate, which lead to investors losing money or not make as much money as they expected when the investment was made. Political risk includes "inconsistency in policies, changes in laws and regulations, restrictions on fund repatriations, and import restrictions"(Ozorhon et al, 2007)..

Political risk is the most obvious risk when projects exposed in international environment (Khattaba, Anchorb and Daviesb, 2007).. Overseas projects normally need to take a few years to complete, but the host country's political leaderships might be changed during that period, this situation will affect overseas project's completion. Moreover, Ling and Hoi (2006). argue that in order to protect local counterparts, the host country will adopt some policy to restrain foreign investment. These policies include "limitation foreign ownership on development projects or getting foreign

participants to undertake disproportional amount of risk". For example, in India, political leaders who want to show their concern and careness for local business may not welcome foreigners in an election year. Similarly, basing on a research on Jordanian's international projects, Khattaba, Anchorb and Daviesb (2007). conclude that in Middle East area, international projects are more concerned about "host-society and interstate related risks than host-government related risks". Political risk accompanied with international projects is a significant threat to most Jordanian's international projects.

All the risk management experts felt that it is the most difficult thing for overseas business to mitigate political risk because political changes are hard to predict. Ling and Hoi (2006). suggest some clues for overseas development projects stakeholders to follow to reduce political risks. First of all, when evaluate and select overseas development projects, project location need to be carefully selected to avoid "political hotspots". Secondly, select projects with shorter duration are proved better than those with long-duration to reduce the potential political risks. Next, to those new entrants, reduce participating in government projects instead of seeking opportunities in the private sector to avoid involving in political competitions. Finally, cooperate and keep good relationships with the local government to obtain government's guarantees. At the same time, buying insurance for political risks to get compensation if hazard happen.

2.3 Economy/Financial Risk and Response Strategy

One of the main purposes for companies venturing overseas is to achieve the pre-determined financial rewards. But if economic and financial factors are not properly managed, can lead to bankruptcy (Kangari, 1995).. Ozorhon et al (2007). describe financial factor as the host country's macroeconomic conditions, which include fluctuations in economic conditions, inflation, and foreign exchange rates. They also argue that macroeconomic conditions will strongly affect the overall performance of international joint ventures. Similarly, El-Sayegh (2007). maintains that in United Arab Emirates (UAE)., the significant risks in international construction industry is economic risks such as inflation and fluctuating prices, material shortage and labour supply shortage. In addition, Ling and Hoi (2006). state that "the repatriation of profits back to the home country" is another financial risk. Overseas projects need to pay tax twice: on the profit earned and on the remittance of monies back to the home country. This reduces the profitability of projects.

Ozorhon et al (2007). suggest that to mitigate the economy/financial risks, an effective method is to make sure "…the contract between the owner and the joint ventures is unambiguous and the duties, responsibilities and liabilities of the parties are clearly stated at the start of the project". He (1999). claims that allocating risks through contracts is a very normal method in overseas projects practice. Some risks, which include "interest rate fluctuation, inflation, foreign currency exchange rate fluctuation, tax rate increase, funding/payment shortage…" can be allocated to the local employer, local owner or the local subcontractors. In specific, Wang et al (2001). suggest that to cope with the risk comes from currency fluctuation, firms can carefully plan which currency of payment should use in the contract. "It is possible to sign a dual-currency contract, with one portion to be paid in local currency and the rest paid in foreign currency".   In addition, Dey and Ogunlana (2001). maintain that some of the financial risks such as inflation and the exchange rate must be analysed from a political aspect, because these risks can be greatly affected by stability of the host country and economic policies. Therefore, methods to reduce political risks can mitigate financial risks as well.

2.4 Cultural Risk and Response Strategy

Cultural risk is another significant risk to overseas development projects. Any company, which wants to carry out or manage a project successfully in other country, should be able to know the culture of the host country clearly. Cultural risk, if not properly understood, can bring misunderstandings and inefficient working (Low and Shi, 2001).. When companies carry out overseas projects, they are normally involved in a temporary project team that people come from different nationalities. Different culture, different language, different background and different perspective will make it extremely hard to keep good communication between team players. For example, according to a study conducted by Ling and Hoi (2006)., when Singapore's AEC (architecture, engineering and construction). firms undertake construction projects in India; it was found that there is significant cultural difference between foreigners and Indians.

When dealing with culture risks, Ling and Hoi (2006). state that foreign firms operating in other country should not try to change the way of the host country's working. Instead, foreigners should understand and appreciate local culture and practices. Moreover, foreigners should be flexible and extremely patient to local people. In these ways, foreigners can win local population's trust and receive friendly treatment from them.

Pheng and Leong (2000). claim that project manager is the key person when coping with culture risks. They argue that project managers in the international marketplace should have five kinds of skills: communication, leadership, interpersonality, adaptability and flexibility. Without these skills, overseas project managers may fail to tackle cultural problems, which can cause unnecessary costs/losses to their companies. In a word, project managers should be fluent in cross-cultural management. They should together with other team members to identify primary cultural differences and then adopt considerate measures to achieve project performance.

Low and Shi (2001). also suggest that overseas project manager with cross-cultural working experience is essential. If

overseas project managers have ever been working in the host country, they can know the culture of the host country better. This knowledge will probably help them to avoid cultural misunderstanding between themselves and their foreign staffs. Therefore, to choose overseas project manager, who has previous working experience in the host country, is an effective method to mitigate culture risks.

3. Integrated Risk Management Model/Method for Overseas Development Projects

As to a specific project, although some of the individual risk factors may be more significant than the others, the project success rely on a company's ability to combine all risks and figure out integrated response strategy (Dikmen, Birgonul and Han, 2007).. In addition, during the whole project lifecycle, every overseas development project has different types of risks in each phase; it is important to satisfy the particular needs of a specific phase (Han et al, 2007).. However, to identify and assess all the overseas projects risks and their relationships is a very complicated, expensive and time-consuming process. This process is almost unreality for the majority of projects (He, 1999).. In these senses, using integrated risk management model to identify and control those vital risk factors is essential.

There are a lot of models proposed for overseas project risk assessment. Han et al (2007). suggest a web-based integrated risk management system. They claim the system is able to constantly check and monitor various risks that arise through the life cycle of a project, "…anyone can access the system anywhere in the world, anytime, with any device". Dikmen, Birgonul and Han (2007). recommend a fuzzy risk assessment model to rate cost overrun risk in international construction projects. The model was tested in an international construction company's overseas project in Turkey. It was found that the proposed methodology could be easily applied by the experts to quantify risk ratings. It can provide the company guidelines of the amount of risk premium. He (1999). also develops an effective method to combine risk probability analysis with risk impact assessment to identify and control vital risk in overseas construction projects. All the studies indicate that integrated risk management models are believed can help companies make better decision when carring out overseas development projects. Companies should choose comprehensive models according to the real situation of their projects.

4. Conclusion

This report explores the unique risks faced by overseas development projects and how to respond to those risks. The unique risks faced by overseas development projects include political risk, economic / financial risk and cultural risk. Among these risks, political risk is the most difficult to mitigate. To mitigate it, overseas project stakeholder should locate and choose overseas projects carefully. Cooperating and keeping good relationships with the local government are also necessary. Economy/Financial risk includes interest rate fluctuation, inflation, foreign currency exchange rate fluctuation, tax rate increase etc. Effective risk responds such as considerate contract and allocate risk to partners are presented. Culture risk is another significant risk. To mitigate culture risk, foreigners should understand and respect local culture. Appointing overseas project manager who is good at cross-culture management and has previous working experience in host country are also useful.   In order to manage different types of risks in each phase of project lifecycle and to identify vital risk in overseas project, integrated risk management models should be tailored to help companies make better decision in pursuing overseas development projects. However, every overseas development project is unique, the risk response methods used in overseas projects should also vary from project to project, and should be very flexible in terms of their operation.

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A Research on the Relationship of Logistics Industry Development

and Economic Growth of China

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Abstract

This paper selects Gross Domestic Product (GDP) as referential series of dependent variable, and selects logistics industry value added, total employment of logistics industry, new fixed assets investment, freight volume, freight turnover as compared series of independent variable, uses grey relational analysis method, researches on the relationship between China logistics industry development and national economic increase from two angles of logistics size and logistics efficiency.

Keywords: Logistics industry, Economic increase, Grey relational analysis, Logistics size, Logistics efficiency

1. Introduction

Logistics industry is a rising basic industry in China, and it is playing a more and more important role in national economy and social development. There is a strong coupling between logistics industry and other industries of national economy, it comes along with the great social demand to logistics activities. Today, while other input factors are gradually becoming perfect, logistics become the restrictive factor to increase of overall economic benefit and social benefits (Shuai, 2006, P.58). In socialized production, all industrial departments are interdependent, any industry can not produce and develop without logistics. It is very important, for the healthy development of logistics industry in the future, to research into the correlative relationship between logistics industry and others, and reveal the relation structure and proportional relationship, and reasonably position the logistics in national economy.

2. Study Method and Literature Review

To analyze the relationship between logistics industry development and economic growth, we can build a statistics model by analyzing the relationship among all factors, such as regression analysis, variance analysis, principal component analysis. But these methods have very high requirements to the sample size and sample distribution, even we have a large sample size, it still need study population to obeys some certain typical probability distributions. Grey relational analysis method has unique advantages, it can avoid the limits of mathematical statistics method. Grey relational degree analysis (GRA) measure relational degree among factors, open out the character and degree of dynamic correlation of things based on similar and dissimilar degree of development trend among factors. (Deng, 1997, P.40) Compared with mathematical statistics method, grey relational analysis method has no special requirements to sample size and data distribution, it has low computational complexity, and easy to realize. Thereby, it makes up the shortcomings of mathematical statistics method.

At the present time, there is seldom research on correlation between logistics industry and national economy. (Huang & Xu 2005, P.1) analyzed the relationship between logistics industry and economic development by qualitative analysis method, they pointed out the macroeconomic and microeconomic significance of developing modern logistics industry. Using comparative analysis method and linear regression analysis method, (Tang & Zou, 2007, P.23) demonstrated that modern logistics which is based on expressway could change the economic increase style by increasing circulation efficiency and reducing operation cost. (Liu & Li, 2007, P.151) analyzed the relationship between modern logistics industry development and economic increase from the angles of supply promoting and demand pulling. That paper, with Granger causality test method, also analyzed the bilateral causality between logistics industry development and economic development taking Zhejiang Province as an example. Literatures [(Song, Li, Zhu, Ruan)] all researched on correlative industries of logistics industry in the input-output method by analyzing the section data and calculating the correlation coefficient of industrial relationship. This paper, using grey relational analysis method and time series data, studied the relationship between logistics industry and national economy from the dynamic angle.

3. Index Selection and Grey Relational Analysis Method

3.1 Index Selection

Logistics industry development has close relationship with economic increase. This paper selects Gross Domestic

Product (GDP) as economic increase index. Logistics industry development level can be reflected by benefit indexes and dimension indexes, such as output and employment. On the aspect of scale, we select logistics industry value added, total employment of logistics industry and fixed assets investment three indexes to reflect output scale and employment scale of logistics industry. Because of statistical data limit, we use freight volume and freight turnover two physical quantity indexes to reflect benefit of logistics industry (Wu, 2008, P.118). This study depends on the publication data from China Statistical Yearbook issues from 2001 to 2008.

3.2 Grey Relational Analysis Method (Liu & Dang, 2004, P.55)

Grey system theory was originated by Deng in 1982 and has been widely used to solve the uncertainly problems under the discrete data and incomplete information. It is a recent theory that deals with poor, incomplete, or uncertain problems of the systems. One of the major advantages of the grey system theory is that it can generate satisfactory outcomes using a relatively small amount of data or with great variability in factors since it can increase the data regularity with proper data treatment. Similar to fuzzy set theory, grey theory is an effective mathematical means of resolving problems containing uncertainty and indetermination. The concept of grey relational space was proposed by Deng, based on the combined concepts of system theory, space theory and control theory. It can be used to capture the correlations between the reference factor and other compared factors of a system. The grey relation analysis (GRA) is one that analyzes uncertain relations between one main factor and all the other factors in a given system. Fields covered by grey theory include forecasting, system control, data processing, modeling, and decision-making.

The calculation procedures are summarized as follows.

Step 1: Generate the referential series of $X_0 = (x_0(1), x_0(2), \cdots, x_0(n))$ and x_i is the compared series of $X_m = (x_m(1), x_m(2), \cdots, x_m(n))$, where. $i = 1, 2, \cdots, m$ The compared series x_i can be represented in a matrix form as (1).

$$X_i = \begin{vmatrix} x_1(1) & x_1(2) & \cdots & x_1(n) \\ x_2(1) & x_2(2) & \cdots & x_2(n) \\ \vdots & \vdots & \ddots & \vdots \\ x_m(1) & x_m(2) & \cdots & x_m(n) \end{vmatrix} \tag{1}$$

Step 2: Normalize the data set. The formula is defined as (2).

$$X_i^{'} = X_i / x_i(1) = \begin{vmatrix} x_1^{'}(1) & x_1^{'}(2) & \cdots & x_1^{'}(n) \\ x_2^{'}(1) & x_2^{'}(2) & \cdots & x_2^{'}(n) \\ \vdots & \vdots & \ddots & \vdots \\ x_m^{'}(1) & x_m^{'}(2) & \cdots & x_m^{'}(n) \end{vmatrix} \tag{2}$$

Step 3: Calculate the distance of $\Delta_i(k)$, that is, the absolute value of difference between $x_0^{'}(k)$ and $x_i^{'}(k)$. The formula of $\Delta_i(k)$ is defined as (3).

$$\Delta_i(k) = |x_0^{'}(k) - x_i^{'}(k)| \quad (i = 1, 2, \cdots, m) \tag{3}$$

Step 4: Calculate the grey relational coefficient $\gamma(x_0(k), x_i(k))$ using the equation (4).

$$\gamma(x_0(k), x_i(k)) = \frac{\min\limits_{i} \min\limits_{k} |x_0(k) - x_i(k)| + \xi \max\limits_{i} \max\limits_{k} |x_0(k) - x_i(k)|}{|x_0(k) - x_i(k)| + \xi \max\limits_{i} \max\limits_{k} |x_0(k) - x_i(k)|} \tag{4}$$

$$(k = 1, 2, \cdots, n; \ i = 1, 2, \cdots, m)$$

Where ξ is the distinguished coefficient, $(\xi \in [0,1])$.

Step 5: Calculate the degree of grey coefficient. The grey relational grade is defined as (5).

$$\gamma(X_0, X_i) = \frac{1}{n}\sum_{k=1}^{n}\gamma(x_0(k), x_i(k)) \quad (i = 1, 2, \cdots, m) \tag{5}$$

According to the results of GRA, if any alternatives has highest grey relational grade, then it is the most important or optimal alternative.

4. Empirical Analysis

Logistics industry development has a close relationship with economic increase. This paper selects six indexes to analyze the relation of logistics industry development and economic increase, they are logistics industry value added, total employment of logistics industry, new fixed assets investment, freight volume, freight turnover and GDP.

Based on analysis demand, we select GDP as referential series of dependent variable, and select logistics industry value added, total employment of logistics industry, new fixed assets investment, freight volume, freight turnover as compared series of independent variable. By normalizing the data set with standardizing method, we can obtain the normalized referential series. (see Table 1)

From Table1, Difference sequences are:

$\triangle 1$= (0, 0.0099, 0.0033, 0.0846, 0.1012, 0.0879, 0.1102, 0.1446)

$\triangle 2$= (0, 0.1503, 0.2813, 0.4431, 0.7027, 0.9671, 1.2056, 1.5688)

$\triangle 3$= (0, 0.1436, 0.1573, 0.5862, 0.6720, 0.6860, 0.8612, 1.0680)

$\triangle 4$= (0, 0.0735, 0.1210, 0.2175, 0.3555, 0.4762, 0.6367, 0.8400)

$\triangle 5$= (0, 0.0288, 0.0692, 0.1538, 0.0446, 0.0358, 0.1315, 0.2268)

Where, $\triangle max = 1.5688$, $\triangle min = 0$, $\xi = 0.5$, we can get table of correlation coefficient, (see Table 2).

As can be seen from table 2, the grey relational degree of logistics industry value added, total employment of logistics industry, new fixed assets investment, freight volume, and freight turnover are all bigger than 0.6, close to 1, which indicates that all the six indexes have greater impact on GDP. The most important factor is logistics industry value added, second is freight turnover, the influence degree of total employment of logistics industry and new fixed assets investment on national economy are relatively small.

5. Conclusion and advice

Through the correlation research of Chinese logistics industry and national economy increase, we can see that logistics industry value added, total employment of logistics industry, new fixed assets investment, freight volume, and freight turnover have greater impact on economic increase, the two most important factors are logistics industry value added and freight turnover. Logistics industry value added is part of logistics scale, and freight turnover is part of logistics efficiency. This indicates that both the enlargement of logistics scale and the increase of logistics efficiency can bring tremendous influence on the development of national economy.

Total employment of logistics industry is the minimum influence factor on national economy among the six measuring factors. Logistics industry of China is very short of professionals now. Just increasing the employment amount cannot meet the demand of the rapid development of logistics industry. Besides the increase of employment amount, we should pay more attention to improve the quality of employees. From the aspect of school education, we need reform the logistics professional education method, considering market demand, adjusting the curriculum, and innovating practice manner, to link the talents education well with the jobs needs. On the other hand, we should pay attention to the training for the current logistics employees, let them learn by doing in their jobs, increase their consciousness and ability of customer service.

New fixed assets investment of logistics industry is a relatively small influence factor on national economy too. Logistics industry development needs to increase the investment in fixed assets to construct logistics infrastructure. On the other hand, utilizing existing facilities effectively and improve their efficiency are more important. At the present time, the global economy is depressing, China is implementing economic stimulus plan. Logistics industry is one of the ten industries of revitalization plan, there will be a lot of logistics infrastructure projects. Therefore, both national and local governments should plan ahead to avoid repeated construction, and to lay a solid foundation to increase the utilization efficiency of logistics infrastructure.

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Table1. Normalized Data of Six Indexes from 2002-2007

	2000	2001	2002	2003	2004	2005	2006	2007
GDP	1	1.1052	1.2129	1.3690	1.6114	1.8467	2.1360	2.5151
logistics industry value added	1	1.1151	1.2162	1.2844	1.5102	1.7588	2.0258	2.3704
logistics industry total employment	1	0.9549	0.9315	0.9259	0.9087	0.8796	0.9304	0.9462
new fixed assets investment	1	0.9617	1.0555	0.7828	0.9394	1.1606	1.2749	1.4471
freight volume	1	1.0317	1.0918	1.1515	1.2559	1.3705	1.4993	1.6750
freight turnover	1	1.0765	1.1436	1.2152	1.5669	1.8108	2.0045	2.2883

Table 2. Six indexes' correlation coefficient table from 2002-2007

	2000	2001	2002	2003	2004	2005	2006	2007	grey relational degree
logistics industry value added	1	0.9875	0.9958	0.9027	0.8857	0.8992	0.8768	0.8443	0.9240
logistics industry total employment	1	0.8392	0.7360	0.6390	0.5275	0.4478	0.3942	0.3333	0.6146
new fixed assets investment	1	0.8453	0.8329	0.5723	0.5386	0.5334	0.4767	0.4235	0.6528
freight volume	1	0.9143	0.8663	0.7829	0.6881	0.6223	0.5520	0.4829	0.7386
freight turnover	1	0.9646	0.9189	0.8361	0.9462	0.9563	0.8564	0.7757	0.9068

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