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Malaysian Cuisine – A Saleable Brand in Chennai

Charlet Christina Rajakumari R.

Abstract-Malaysia is an integrated society of Malays, Bumiputeras, Chinese and Indian Population, practicing Islam, Buddhism, Christianity, Daoism, Hinduism, Sikhism and Shamanism. Malaysian cuisine is a mixture of Thai. Indian. Chinese and many other cultures. A close analysis reveals that India and Malaysia are quite similar with respect to the traditional values, tribal contributions and obvious food habits. The historical migrations from India to Malaysia in the 19th century and the geographical advantage of Malaysia has resulted in similar eating habits and symphony of flavours. In spite of the similarities Malaysian food is not well accepted by the Chennai population. The facts of the Chennai dining industry show that Chinese, American, European and Italian cuisines are more popular in Chennai rather than Malaysian cuisine. Therefore an attempt to derive a formula for success of Malaysian restaurants in Chennai is undertaken in this research.

Index Terms—Customer perception, India, Malaysia, marketing strategies, restaurants.

I. INTRODUCTION

Malaysia is an integrated society of Malays, Bumiputeras, Chinese and Indian Population, practicing Islam, Buddhism, Christianity, Daoism, Hinduism, Sikhism and Shamanism. Though the traditional Bahasa Malaysia is the national language and is widely spoken, the urban population of Malaysia have started using English and Malay slang words in their everyday communication. Malaysia has acquired traditional dance forms that originated from India, Portuguese and Thai. Malaysian cuisine is a mixture of Thai, Indian, Chinese and many other cultures. A close analysis reveals that India and Malaysia are quite similar with respect to the traditional values, tribal contributions and obvious food habits. The historical migrations from India to Malaysia in the 19th century and the geographical advantage of Malaysia has resulted in similar eating habits and symphony of flavours. Both Indians and Malaysians have a love towards food in the way it is cooked. They enjoy hot food with lots of spices and relish rice with sea food. Foods of Indian origin including rice, roti, dosai, idly dominate Malaysian cuisine. Both kitchens use tamarind paste, coconut milk and spices like cardamom, turmeric, cinnamon, cloves, cumin seeds, curry leaves etc. in day to day cooking.

After learning these similarities shared between India and Malaysia, one tends to think that both countries accept and appreciate the food culture of one another. But the facts of the Chennai dining industry show that Chinese, American, European and Italian cuisines are more popular in Chennai

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rather than Malaysian cuisine. Hence the researcher is motivated to study the attitude of Chennai population towards Malaysian food and suggest ideas for making Malaysian cuisine saleable in Chennai.

II. REVIEW OF LITERATURE

- Multinational fast food franchisees adopt advanced styles of marketing strategies like segmentation, targeting, positioning etc., when compared to Indian fast food franchisees. MNCs' follow demand based, competition based and geographical pricing policy but Indian restaurants mostly fix their price based on competition. Aggressive advertising and customer relationship management are the reasons for success of multinational fast food franchisees [1].
- 2) The Chinese retailers specifically analyze the customers' buying behavior and structure their positioning strategies considering the attitudes and buying behavior of the customers. This has resulted in huge sales in the up market stores in China [2].
- 3) Indian market is well catered well with ready to eat food like pizzas, burgers, hot dogs etc., by the American, Italian and Chinese outlets. The demand for American, Chinese and Italian food style is ever increasing due to convenience, lack of time for cooking, change in life style etc [3].
- 4) Organized retail outlets can capitalize on the spending power of the nuclear urban families in India who have divergent tastes and unique needs. Hence hotel retailers can profit from an organized franchise model that has an in built objective of reduced cost of rent and human resource [4].
- 5) The Americans who had knowledge about Hansik (Korean food) have tried Korean food. The attitude towards Hansik urged the Americans not only to try Hansik but also motivated them to visit Korea at least once [5].
- 6) International brands decide to franchise their outlets in India due to direct stimuli, background and demographic factors of the decision maker. International brands offer superior service quality when compared to the Indian brands [6].
- 7) There is no significant difference in the behavior of different aged male and female customers. All customers look out for good standardized hotels, safety and cleanliness in restaurants [7].
- 8) Food industry grows rapidly since the financial risk is very low. Uncertain market conditions must be considered and analysed while expanding operations from one country to another [8].
- 9) Emotions and memorable experience in a hotel enhances

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satisfaction, improves retention, results in positive word of mouth and helps in creating and maintaining good relationship between customer and the employees and thereby increases customer loyalty [9].

10) Variety drives the customers to experimenting new restaurants and new types of food. Boredom strikes a customer when he visits the same restaurant time and again. The managers should keep introducing variety in their menu. New interiors, change in wall pictures, advertising style can create a new mood when the customers come back to the same restaurant [10].

III. OBJECTIVES OF THE STUDY

- 1) To study the attitude of Chennai population towards Malaysian food.
- 2) To analyze the mind blocks of Chennai population in trying Malaysian food.
- 3) To derive a formula for success of Malaysian restaurants in Chennai.

IV. METHODOLOGY

TABLE I: SAMPLE SIZE

Cases	Ν	%
Valid	200	100.0
Excluded	0	.0
Total	200	100.0

A sample of 200 people from the population of Chennai was randomly interviewed and their responses were collected by way of printed questionnaires. The data thus obtained was analyzed using statistical tools namely Frequency, Cross-Tabs, Chi-Sq., ANOVA and Factor Analysis. The results were interpreted, inferences were drawn and presented in the findings.

V. HYPOTHESIS

- 1) "There is no significant difference between the attitudes of young and older people towards Malaysian cuisine".
- 2) "There is no significant difference between the attitudes of men and women towards Malaysian cuisine".
- 3) "There is no association between the type of occupation and the hesitation to try Malaysian food".
- 4) "There is no association between the marital status and the hesitation to try Malaysian food".

VI. DISCUSSION

The sample studied included men and women belonging to different age groups both married and un- married working in different organizations and practicing various professions in Chennai. All classes of the society drawing high, average and low level of salaries were considered for the survey. The majority of the respondents were married men of 26 - 35 years working in the IT sector earning from 15000-30000.

Demographics	Group	Freq
Ago	15 25	54
Age	15 - 25	34
	26 - 35	72
	36 - 45	29
	46 - 60	36
	Above 60	9
Gender	Male	109
	Female	91
Occupation	Government	11
	Non - Government	55
	Software	80
	Business	5
	Professional	24
	Retired	1
	Student	21
	Unemployed	3
Monthly Income	Less than 15000	53
	15001 - 30000	96
	30001 - 45000	30
	Above 45000	21
Marital Status	Married	107
	Single	93

TARLE II. DEMOCRAPHICS

TABLE III: RELIABILITY STATISTICS

Cronbach's Alpha	N of Items
0.708	44

The reliability test showed a Cronbach's Alpha value of 0.708 (>0.5) which denotes that the data can be commended as highly reliable.

TABLE IV: NUMBER OF RESPONDENTS WHO KNOW THAT THE GIVEN

D	E () (200)
Restaurant	Frequency (out of 200)
Pelita Nasi Kandar	79
Dim Sum	35
Her Name is Ming	36
Momo Restaurant	42
Hotel Malaysian Inn	168
L'attitude 49	31
Night Queen	38

TABLE V: NUMBER OF RESPONDENTS WHO KNOW THAT THE GIVEN FOOD

IS MALA I SIAN					
Food	Frequency (out of 200)				
Nasi Kandar	83				
Nasi Dagang	69				
Bakuteh	46				
Hokkien Mee	47				
Sang Har Noodles	35				
Char Siew Rice	31				
Nasi Lamek	67				

Table IV and Table V show that the Chennai population is completely ignorant about Malaysian restaurants in Chennai and Malaysian food. Only about one – fourth of the population knew that the stated restaurants and foods belonged to the Malaysian origin. It's obvious that one identifies the Hotel Malaysian Inn to be Malaysian since the name implies so. This proves the fact the name of the restaurant has an impact in the identity of the restaurant.

A. Perception about Taste of Malaysian Food

Fig. 1 depicts the perception of the Chennai population about the taste of Malaysian food. Most of them believe it to be raw and semi cooked having a combination of sour and sweet flavor. Some feel that Malaysian food would be bland and tasteless. Only a few realize that Malaysian food is actually hot and spicy. This once again proves that Chennai population has no idea about Malaysian food.



Fig. 1. Taste of Malaysian food.

B. Number of Respondents Who Have Tasted Malaysian Food

Fig. 2 shows that less than a quarter of the Chennai population has ever gone to a Malaysian restaurant or even tasted Malaysian food in any restaurant. It's right to say that Malaysian food is unpopular in Chennai.



Fig. 2. Tasted Malaysian food.





Fig. 3. Reasons for not visiting Malaysian restaurants.

D. Reason for Not Trying Malaysian Food

When the respondents were interviewed about the reasons for not visiting Malaysian restaurants and trying such food the common response was "is such a place there in Chennai?" This response describes the ignorance of the Chennai population with respect to the Malaysian food and the places where it's available.



Fig. 4. Reasons for not trying Malaysian food.

E. Willingness to Try Malaysian Food Free of Cost



Fig. 5. Willingness to try Malaysian food for free.

Though the Chennai people are unaware of Malaysian food, their minds are not closed towards trying it. Though few people have an aversion towards Malaysian food nearly three - fourths of the population is ready to try it for the first time. This throws a huge scope for capturing Chennai market with Malaysian food.

F. Factors Considered While Choosing a Restaurant



Fig. 6. Factors considered.

Universally hygiene is the most important feature that a customer looks for in a restaurant. Though location and price play significant part in narrowing down to a particular restaurant, hygiene continues to be the most important concern of the Chennai people in deciding the restaurant to pop in.

G. Necessity of Tamil / English in the Restaurant

Only a negligible percentage of the respondents are ok with Malaysian names, menu cards with no English/ Tamil explanations and bearers with less fluency in English/ Tamil. Most of them feel that a Tamil or an English name is necessary to enable them to identify a Malaysian restaurant and they also demand that the menu card must have a clear explanation of every dish in English/ Tamil so that they can choose what they actually want to eat. Chennai population is more comfortable in placing orders with a tamilian who speaks good Tamil and English than a Chinese or a Malaysian who do not understand what the customer expects. It can be inferred from the above facts that the best manner to motivate a person in Chennai to visit a Malaysian restaurant is by naming the restaurant in Tamil or English, having menu cards with understandable explanations and employing Tamilians in the restaurant.



Fig. 7. Necessity of Tamil / English.

Number of respondents willing to try Malaysian restaurants when the following features are promised (out of 200)

TABLE VI: WILLINGNESS TO VIS	SIT MALAYSIAN RESTAURANT
------------------------------	--------------------------

Willingness	Yes	May Be	No
Publicized	94	78	28
Hot & Spicy	101	63	36
Reasonable Price	121	54	25
Translation	104	59	37
Bearers	107	63	30



Fig. 8. Willingness to visit Malaysian restaurants.

Table VI and Fig. 8 show that more than 50% of the respondents are willing to try Malaysian restaurants if the restaurant is publicized, if the food is hot and spicy, if the price is reasonable, if menu cards have clear explanations and bearers speaking good Tamil/ English are available.

H. Identifying the Target Market

H₀: "There is no significant difference between the

perceptions of the different age groups with respect to the taste of Malaysian food."

TABLE VII: AGE AND PERCEPTION TOWARDS TASTING MALAYSIAN FOOD

Age	Ν	Mean	S.D	F	Р
15 - 25	54	2.26	0.894	2.061	0.087
26 - 35	72	1.79	0.821		H ₀ accepted
36 - 45	29	1.93	0.842		
46 - 60	36	1.92	1.105		
> 60	9	1.89	1.269		

 H_0 : "There is no significant difference between the perception of the male and female respondents with respect to the taste of Malaysian food"

TABLE VIII: GENDER AND PERCEPTION TOWARDS TASTING MALAYSIAN

FOOD						
Gender	Ν	Mean	S.D.	F	Р	
MalE	109	2.00	0.903	0.337	0.562	
Female	91	1.92	0.969		H_0 accepted	

 H_0 : "There is no association between marital status and the readiness to try Malaysian food"

TABLE IX: MARITAL STATUS AND READINESS TO TASTE MALAYSIAN FOOD

Marital Status		Trying Malaysian Food		Chi	Р	
		Yes	No	Total	Sq.	
Married	Count	59	48	107	3.931	0.047
	Row %	55.1	44.9	100.0		
	Column %	48.0	62.3	53.5		H_0
Single	Count	64	29	93		rejected
	Row %	68.8	31.2	100.0		
	Column %	52.0	37.7	46.5		
Total	Count	123	77	200		
	Row %	61.5	38.5	100.0		
	Column %	100	100.0	100.0		

H_0 :	"There	is	no	association	between	occupation	and
readin	ess to try	/ M	[alay	vsian food"			

TABLE X: OCCUPATION AND READINESS TO TASTE MALAYSIAN FOOD

Occupation		Readine Food	ess to try l	Malaysian	Chi Sq.	Р
		Yes	No	Total		
Gover	No.	7	4	11	8.223	0.313
nment	R %	63.6	36.4	100		
	C %	5.7	5.2	5.5		
Non -	No.	30	25	55		
Gover	R %	54.5	45.5	100		
nment	C %	24.4	32.5	27.5		
IT	No.	54	26	80		
	R %	67.5	32.5	100.0		
	C %	43.9	33.8	40.0		
Busi	No.	2	3	5		
ness	R %	40.0	60.0	100.0		H ₀
	C %	1.6	3.9	2.5		accepted
Profes	No.	12	12	24		
sional	R %	50.0	50.0	100.0		
	C %	9.8	15.6	12.0		
Retire	No.	0	1	1		
d	R %	.0	100	100.0		
	C %	.0	1.3	.5		
Stu	No.	16	5	21		
dent	R %	76.2	23.8	100.0		
	C %	13.0	6.5	10.5		
Unem	No.	2	1	3		
ployed	R %	66.7	33.3	100.0		
	C %	1.6	1.3	1.5		
Total	No.	123	77	200		
	R %	61.5	38.5	100.0		
	C %	100	100	100.0		

The objective of this study was to derive a formula for success of Malaysian restaurants in Chennai. The first step towards this goal is identifying a target market by segmenting the Chennai market on the basis of gender, age, marital status and occupation. The data was tested by using statistical tools namely Chi-Sq. and ANOVA.

I. Inference

TABLE XI: RESULTS OF HYPOTHESIS TESTING

Factors	Test employed	P	H_0	Inference
		Value		
Age and Malaysian food	ANOVA	0.087	Accepted	No difference among different age groups
Gender & Malaysian food	ANOVA	0.562	Accepted	No difference among the two genders
Marital status and Malaysian food	Chi-Sq.	0.047	Rejected	Association exists between marital status and the readiness to try Malaysian food.
Occupation and Malaysian food	Chi-Sq.	0.313	Accepted	No association between occupation and readiness to try Malaysian food

The researcher finds that most of the respondents irrespective of their age, gender and occupation are willing to try Malaysian food. But the Chi-Sq. test run in order to test the association between the marital status and the readiness to taste Malaysian food showed that there is an association between the marital status of the respondent and the readiness to taste Malaysian food. Un-married people are more eager to taste Malaysian food than the marited respondents. This can be understood from Table IX which shows that out of 107 married respondents only 59 were ready to try Malaysian food but out of 93 un-married respondents 64 were ready to try Malaysian food.

J. Most Wanted Factors in a Malaysian Restaurant

In order to find out the factors that customers look out for in a Malaysian restaurant, Factor test is applied. The KMO and Bartlett's test was employed to examine the validity of the Factor test. Since the significance value is lesser than 0.05 (0.000) as shown in Table XII the Factor test is valid.

TABLE XII: KMO AND BARTLETT'S TEST	ſ
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Kaiser-Meyer-Olkin Adequacy.	Measure	of	Sampling	.748
Approx. Chi-Square				808.994
df				105
Sig.				0.000

The respondents were asked to give their opinion about 16 factors under three categories namely, Food, Ambience and Staff qualities, which they look out for in a Malaysian restaurant. The responses were analyzed by employing Factor test and the results categorized the factors into four

new groups on the basis of the level of influence in the decision making. The most important factors that a customer looks out for in a restaurant is the restaurant ambience including pleasant music, air conditioning, sophisticated interiors, adequate space and staff with neat appearance. Food look, aroma, quantity and variety in menu follow next. The least sought out factors include price, time and taste.

These results clearly explains the character of Chennai population. Once they decide to go to a Malaysian restaurant they would definitely demand a stylish place where they can have a different type of dining experience with good looking food with a great aroma. They are not concerned about the price charged or the time taken for the service since they are prepared to spend good amount of money and time in search of a different and new dining experience. They are ready to appreciate any taste that the Malaysian heritage offers.

Total Variance Explained						
Factor	Initial Eigen Values		Extracti of Squa Loading	on Sums red 55	Rotation Sums of Squared Loadings	
	Total	% of Variance	Total	% of Variance	Total	% of Variance
1	4.325	28.831	4.325	28.831	2.402	16.016
2	1.525	10.166	1.525	10.166	2.345	15.636
3	1.345	8.964	1.345	8.964	1.968	13.118
4	1.203	8.020	1.203	8.020	1.681	11.210

TABLE XIV: ROTATED COMPONENT MATRIX

	Components and % of Variance				
Factors	1 (28.83%)	2 (10.166%)	3 (8.964%)	4 (8.020%)	
Music	0.744				
Air condition	0.728				
Interiors	0.583				
Space	0.577				
Staff	0.570				
appearance					
Food look		0.839			
Food aroma		0.793			
Food menu		0.579			
Food quantity		0.493			
Staff language			0.718		
Food quality			0.663		
Staff service			0.611		
Price				0.852	
Service time				0.653	
Taste				0.424	

VII. FINDINGS

The major findings of the study include:

Malaysian restaurants and Malaysian food is unpopular

in Chennai.

- Majority of the Chennai population has never tasted Malaysian food but they have an open mind towards tasting Malaysian food if offered.
- Name of the restaurant plays a significant role in helping customers identify it with Malaysia.
- The Chennai population is completely ignorant of the availability of restaurants that offer Malaysian food.
- Effective popularizing strategies must be designed and implemented to create awareness about the Malaysian restaurants among the population of Chennai.
- There is no difference in the attitudes of men and women belonging to different age groups and employed in different occupations with respect to the readiness to try Malaysian food.
- Bachelors and spinsters are more eager to try Malaysian food than married people.
- Hygienic environment, Tamil / English association, posh look and attractive food would contribute to the success of a Malaysian restaurant in Chennai.



Fig. 9. Secret of success.

VIII. CONCLUSION

Chennai is a land of countless opportunities especially with respect to the restaurant business. Best example for this is the growth and popularity of Chinese fast food centers in every nook end corner of the city. Foreign food chains like KFC, Mc Donalds, Marry Brown have also reaped huge profits from the Chennai branches. Malaysian restaurants too could enjoy a share of the Chennai market if such restaurants are named with care and popularized adequately. The entire Chennai population can be targeted on but special offers, discount packages and customized marketing strategies can be adopted for the bachelors and spinsters of Chennai. The software companies usually throw parties to their employees where Malaysian food can be offered in order to delight the un-married youth working in such organizations. Once the Malaysian food is popularized, the Chennai crowd will automatically be attracted towards such restaurants. Tamil / English must be used in naming the restaurant and explaining the dishes. Bearers who speak good Tamil / English must be appointed in order to make the customers feel more comfortable. Serving appealing food in a posh and stylish manner with hygienic environment would definitely yield to the success of Malaysian restaurants in Chennai. Success of Malaysian food in Chennai would also motivate the people from Chennai to visit Malaysia adding to the tourism income of Malaysia. In short the researcher finds that name, popularity and ambience are the three mantras for the success of Malaysian restaurants in Chennai.

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Study of Customer Satisfaction in the Banking Sector in Libya

Logasvathi Murugiah and Haitham Ahmed Akgam

Abstract—The purpose of this paper is to evaluate the customer satisfaction of the banks sector in Libya, based on customer perception regarding service quality. This is an empirical study using mainly primary data collected through a well-structured questionnaire. The questionnaire has been personally administered on a sample size of 150 bank customers. This paper makes a useful contribution as there are only a few studies dealing with the assessment of service quality in banking sector of Libya. The findings based on three different independent variables (service quality, customer loyalty and security) showed that all these variables influenced consumers satisfaction in Libyan banking sector. There is a positive and significant relationship between the customer satisfaction and two variables (service quality and customer loyalty), and there is negative and significant relationship between security and customer satisfaction.

Index Terms—About customer satisfaction, customer loyalty, libyan banking sector, security, service quality.

I. INTRODUCTION

The issue of service quality is a critical one throughout service industries as businesses attempt to sustain their competitive advantage in the marketplace. Owing to the financial services like banks' competition in the marketplace through undifferentiated products, this highlights service quality as the basic competitive tool (Stafford, 1996) [1]. In other words, a banking organization may attract customers through the provision of high quality services. As such, structural modifications have led to banks being enabled to carry out various activities which in turn, allow them to be more competitive even against non-banking financial institutions (Angur *et al.*, 1999) [2].

In addition, technological advancements are helping banks develop their service strategies being offered to individual as well as commercial customers. Moreover, banks offering quality services own a distinctive marketing edge because enhanced quality service is associated with higher revenue, customer retention and higher cross-sell ratios (Bennett & Higgins, 1993) [3]. Banks are also well aware of the fact that customer's loyalty lies in the banks' production of greater value compared to their competitors (Dawes &Swailes, 1999) [4].

Libya is a country extending over an area of 1,759,540 square kilometers and is ranked 17th nation in the world according to size. In the context of land area, Libya is smaller compared to Indonesia and approximately akin to the size of Alaska, U.S. To the north, it is bound by the Mediterranean Sea, to the west by Tunis and Algeria, to the southwest by

Niger, to the south by both Chad and Sudan and finally to the east by Egypt. The Libyan economy is primarily dependent on oil sector revenues which makes up almost all export earnings and around a quarter of the GDP (gross domestic product).

The Libyan banking sector has experienced significant developments particularly following the issuance of laws concerning banks and money by the Central Bank of Libya. In 2005, the Central Bank of Libya played a key role in organizing banks and restructuring capitals inducing them to look for investment opportunities in order to compete in the provision of services akin to that of international banking services and in order to attract depositors and investors to increase the equities and complete the capital. These laws urged banks to have a capital not less than 30 million Libyan dinars. Consequently, banks initiated their new marketing services that used to be lacking in Libya including the Visa Card, Electronic Bank Services, Mobile bank, Western Union and Money Gram. In addition, top financial institutions looked to satisfy the customers' needs and demands for their survival and successful competition in the current dynamic corporate marketplace.

Financial institutions generally believe that customers are the aim behind their services and hence their activities depend on their customers. This is why financial institutions are more concerned with customer satisfaction, customer loyalty and their retention (Zairi, 2000) [5]. In fact, customer loyalty stems from the organization's creation of benefit for customers so they will be retained and continue doing business with the organization (Anderson & Jacobsen, 2000) [6].

The main issue being faced by the Libyan banks is that most of them are still being driven under the operation of the outdated programs. Another issue is the lack of qualified and experienced workforce which eventually explains the low quality service delivery to their customers.

Owing to this reason, most banks have developed a method to tackle customer problems. This includes the provision of a suggestion box at the banks' foyer or entrance and the carrying out of a survey with the aims of realizing customer satisfaction. This indicates that to hold the customers' attention and loyalty, it is imperative for banks to set up suggestion and complaint sections like hotlines, 24-hour call services as well as online services (Ahmed Freed, 2012) [7].

Thus, the research objective is to determine the key factors influencing the level of customer satisfaction in Libyan commercial banking.

II. LITERATURE REVIEW

A significant level of customer satisfaction is among the

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most critical indicators of the business's future. Customers who are satisfied are also loyal and this ensures a consistent cash-flow for the business in the future. In addition, satisfied customers are often characterized as less-price sensitive and they are more partial to spend more on the products they have tried and tested before. Moreover, stability in business relations is also beneficial where the positive quality image minimizes the cost for a current customer (Matzler, *et al.*, 1996) [8].

According to Hokanson (1995) [9], satisfaction refers to a feeling or a short term attitude that can change owing to various circumstances. It exists in the user's mind and is unlike observable behaviors like product choice, complaint or repurchase. In a related study, John & Linda (1976) [10], investigated the relationship between expectations, performance and satisfaction. The findings revealed that when a customer judges the performance of a product, he usually compares a set of performance outcomes that are expectations. The product is then likely to be considered as dissatisfactory or satisfactory.

Similarly, Anderson & Sullivan (1993) [11] examined the antecedents and outcome of firms' customer satisfaction and found that quality falling short of expectations have higher impact on satisfaction and retention compared to those exceeding expectations. They also revealed that satisfaction positively affects repurchase intentions and both positive and negative disconfirmations increase with the ease of quality evaluation.

Among the many studies in literature dedicated to customer satisfaction in banks, Albro's (1999) [12] study in the context of Washington, U.S., utilized a benchmark involving bank customers from all geographic areas and bank assets. The study involved asking customers various questions concerning their satisfaction with the banks. Data collected was utilized to benchmark customer satisfaction scores of banks participating in the financial client satisfaction index. The findings revealed that the most significant attributes that results in satisfaction include human interaction issues like 'correcting errors promptly', 'courteous employees' and 'professional behavior'. Moreover, the findings also revealed that the provision of good, personal service is considered by the clients as more important more than convenience or products.

The above findings were consistent with Wan, W. W., Luk C. L & Chow (2005) [13] findings. The latter study was also conducted in Washington and it revealed that customers taking the customer satisfaction survey bought more products compared to the control group that were not participants to the survey. According to the authors, survey participation is what led the customers to develop more positive perceptions towards the company and it convinced them that the firm values and cares about its customers and their feedback.

On the contrary, if the firm is derelict in serving the customer, they will not hesitate to switch to another financial institution. According to Aldisert (1999) [14], customer satisfaction is not becoming significant in a way that some banks view it as a main element in their marketing strategies. The term 'after marketing' has also been commonly utilized to reflect the concentration on expending effort to cater to current customers in an attempt to increase their satisfaction

and to retain them (Vavra, 1997) [15].

Customer loyalty is defined as "the market place currency of the twenty-first century" (Singh & Sirdesh, 2000) [16]. Similarly, Foss & Stone (2001) [17] related customer loyalty to the customer's thoughts and actions. Several customer loyalty experts describe loyalty as a state of mind and a set of beliefs. Among the main elements of loyalty are the information exchange and the relation between the state of mind and behavior. For instance, loyal customers often provide information to service providers because of their sense of trust in them and they expect the service providers to utilize the provided information to their advantage. Moreover, customer satisfaction leads to customer loyalty which in turn, leads to profitability (Hallowell, 1996) [18].

Study related to customer satisfaction in business service is the one by Nawak& Washburn (1998) [19]. They revealed that service quality has a highly significant relationship with overall customer satisfaction. First, they revealed that product quality is a critical element of presentation. Second, the significant relation between timeliness and cost management could support the saying "time is money" in the context of business response to market changes. The third most critical contributor to overall customer satisfaction was revealed to be service quality.

Moreover, Rod, Ashill, Carruthers& Shao (2009) [20] stated that overall internet banking service quality is significantly related to overall customer satisfaction in New Zealand banks. They added that the delivery of high quality online service is called for, for the maintenance or enhancement of the banks' customer satisfaction.

Widespread support has been dedicated to the general notion that customer satisfaction is a key variable for evaluating and controlling bank marketing management (Howcroft, 1991) [21]. Additionally, the main role of service quality in the realm of financial service delivery has been stressed by authors (Avkiran, 1994) [22]. Despite the fact that the constructs of both service quality and satisfaction are often interchangeable, the significant body of research has attempted to clarify the nature of the relationship between them (e.g. Bitner, 1990 [23]; Cronin & Taylor, 1992 [24]; Parasuraman et al., 1991 [25]). Moreover, based on Oliver's (1997) [26] review of the issues, service quality is an antecedent to satisfaction and it is by nature, non-experiential, which is not unlike attitude in nature that can be developed from other sources like word of mouth. Despite the acknowledgement of the multi-attribute nature of both constructs, over the years, researchers have been focusing on the identification of the attributes and expansive dimensions of service quality. Prior works in the topic differentiated between technical and functional quality and stressed on the significance of the functional or service delivery as an element of consumer evaluations. This distinction has influenced later works where researchers (Parasuraman et al., 1988 [27], 1991 [25]) investigated the dimensionality of service quality. Other later works like Smith (2000) [28], provided the following three elements of the service process in addition to outcome; access/convenience, human elements comprising of the combination between instrumental and expressive qualities and finally, tangibles.

III. METHODOLOGY

Data was obtained for this study from a simple random sample of bank customers in the most Libyan cities without limited to specific city, or specific branch. Sampling is taking a fraction of a population to represent the whole population but the researcher only managed to find 150 people to become respondents. Population is a group of people that can involve in the research. Selection of the population is depending on the research conducted by the researcher. Respondents for questionnaire were randomly selected from customer who visited the sampling locations during the chose time intervals, in order to eliminate the sampling frame errors and ensure the representation of the population under the study in the sample units. However, sampling is taking a fraction of a population to represent the whole population but the researcher only managed to find 150 people to become respondents. Population is a group of people that can involve in the research. Selection of the population is depending on the research conducted by the researcher.

Samples are to be made of groups of research. It is a subset or sub-groups in the population selected. Sample reflects the population selected. Researcher use convenience sampling as sampling method. Researcher use this method in order to determine the sample involve in this research. Through this convenience sampling, each customer who makes transaction with all Libyan banking has equal opportunity to be selected as respondents. They are representing of the populations research. Purposely researcher chose this method in order to avoid an imbalance in the selection.

In data collection process, the researcher obtained the data using primary data design. In this research, the researcher use questionnaire as medium to collect data. There are twenty six questions answered by all respondents. The questionnaire is divided into five parts/sections. Part one consists of questions about your demographic profile; continue with part two about the service quality, the third part about customer loyalty, the fourth part trust, and the last part about customer satisfaction, In order to evaluate the effectiveness of this research, researcher use questionnaire as primary resource. Forming of the questionnaire is to see the relationship between independent variables that can influence dependent variable.

In questionnaire distribution process, the researcher explained about the definition of the questions and the purpose of this research to the respondent. The researcher together with the respondent while they answering the questionnaire. This is to make sure the questionnaire return back and respondent answering in good.

In this study the researcher will examine how the independent variables affect the dependent variable. Hence the dependent variable is customer satisfaction, and the independent variables are Customer Loyalty, Service Quality, and Security.

This study has used quantitative research approach. The statistical software SPSS version 19 was employed to ensure the relevant issues is examined in a comprehensive manner. Multiple regression analysis was used to test and examine the hypothesis in the research framework.

IV. FINDING

Table I shows the adjusted R square is 0.380 or 38% of the

variance in Customer Satisfaction has been significantly explained by 1% change in the three independent variables namely, customer loyalty, service quality and security.

TABLE I: MODEL SUMMARY							
R	R-square	Adjusted R-square					
0.624 ^c	0.389	0.380					
Predictors: Constant, customer loyalty, service quality, security.							
TABL	LE II: COEFFICIENTS ^A A	NALYSIS					
	Standardized Coefficients	t					
	Beta						
(Constant)		7.269					
Customer Loyalty	0.522	9.401***					
Service Quality	0.519	6.178***					
Security	-0.303	-3 595***					

Note: ***, ** and * denotes significantly at 1%, 5% and 10% level of significant respectively.

^A. Dependent variable: Customer satisfaction.

Table II shows the coefficients for each model tested. Notice that all models are statistically significant with p-value less than 0.05(p < 0.05) the meaning of that every single predictor variable has contribution in the outcome variable.

Table II also shows coefficients analysis to the variables influencing customer satisfaction. The result indicates that a 1% change in customer loyalty leads to 52.2% increase in customer satisfaction. This result suggests that customer loyalty is the major factor in influencing customer satisfaction. There is a significant and positive relationship between customer loyalty and customer satisfaction (*t*-statistic = 9.401, p < 0.01). The positive relationship indicates that the higher the customer satisfaction in respective banks. Customer loyalty as a major determinant has been supported by past studies such as Luiz Moutinho & Anne Smith (2002) [29].

Customer loyalty refers to the extent of the customer's desire to continue to deal with the bank and not dealing with the alternatives offered by other banks. This study shows that there is positively correlated between customer loyalty and customer satisfaction. The bank customers in Libya prefer transaction with the banks which they feel it's they belongs.

Likewise, as for service quality the result indicates that 1% change in service quality leads to 51.9% increase in customer satisfaction. Almost same with customer loyalty, this result suggests that service quality also has a big influence on customer satisfaction. There is a significant and positive relationship between service quality and customer (t-statistic=6.178, p<0.01). The positive satisfaction relationship indicates that the higher the service quality is expected that the bank provide a higher customer satisfaction in respective banks. The second hypothesis assumed that there is positive relationship between service quality and customer satisfaction in the banking sector in Libya. These results imply that when service quality is high, the customer satisfaction will be also high. The results also show that the customers are satisfied with the quality of service that is provided by banks' staff.

While security represents that 1% change in security leads

to 30.3% decrease in customer satisfaction. This result suggests that security has influence on customer satisfaction. There is a negative relationship between security and customer satisfaction with a statistical significant (*t*-statistic= -3.595. The negative relationship indicates that less security is expected that the bank provide more customer satisfaction in respective banks. The negative relationship indicates that high security provide less customer satisfaction due to high documentation and other banks procedures in applying or getting banking products and services.

V. CONCLUSIONS

Generally this study can conclude that customer satisfaction has positive relationship with customer loyalty and service quality but a negative relationship with security. This study also finds that customer loyalty the main factors influencing the level of customer satisfaction in Libyan commercial banking.

Due to the wide variation of the responses, both public and private banks need to consider the weak areas in order to meet customer requirements. Hence, to be successful in banking sector, banks must provide service to their customer that at least meets or better if exceeds their expectations, and this study provides some sort of guidelines to the policy makers (managers) of banks to take appropriate decisions to improve the quality of services in Libyan banking sector

In this study we give the practitioners more motivation to find new ways to improve the services provided to customers, as well as the pursuit of change the services provided, for example Islamic finance services substitute for traditional services, as well as to speed up services in light of high quality banking services. We also give contribution to parties, individual or institutions. Hence the current research can be as reference for further research in future, especially those researches related to service quality, customer satisfaction, customer loyalty and customer intention to switch.

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An Examination on the Determinants of Inflation

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Abstract—This paper examines factors affecting inflation in two groups of countries (high inflation group and low inflation group) using annual data from 1970 to 2011. An Error Correction Model based on the Autoregressive Distributed Lag (ARDL) modeling has been used to explain the short run and long run impacts of each variable on inflation. The results respectively indicate that GDP growth and imports of goods and services have the significant long run impact on inflation in low inflation countries. Results also indicate that money supply, national expenditure and GDP growth are the determinants of inflation which impose long run impact on inflation in high inflation countries. In the short run likewise, none of the variables is found to be significant determinants in high inflation countries. However money supply, imports of goods and services and GDP growth has significant relationship with inflation in low inflation countries.

Index Terms—About ARDL model, dynamic panel data, GDP growth, inflation, long-run coefficient.

I. INTRODUCTION

Inflation is a monetary phenomenon and the persistent inflation has widely attracted the attention of the economists all over the world. In common, inflation is defined to be a continuous and persistent rise in the general price level and hence leads to a fall in purchasing power. According to [1], inflation is the one form if taxation that can be imposed without legislation. Generally, inflation has been defined either as monetary phenomenon (for example, [2]) or phenomenon of raising prices (for example [3]-[5]).

There is a general agreement amongst economist that economic inflation may be cause by either an increase in the money supply or a decrease in the quantity of goods being supply. Basically, there are four types of inflation as creeping inflation, walking inflation, running inflation and jumping or hyper-inflation. Economists conclude that creeping inflation is a mild inflation which is not dangerous to the economy and is an important instrument of economic development. Walking inflation occurs when prices rise moderately and the annual inflation rate is a single digit. While running inflation refers to the annual inflation rate is double digits and treated as a signal for hyper-inflation. When the price rises to running inflation, it will affect the deprived and middle classes unfavorable.

Hyper-inflation is the prices rise very rapidly and a condition when the rate of inflation becomes immeasurable

and completely uncontrollable. Hyper-inflation occurring when the country imposing it is in desperate need of money.

High inflation and fluctuation in prices is not preferred as it will cause to uncertainty and cost push shock which will affect the stability and performance of economics. Therefore, low inflation and stability in prices is always one of the core objectives targeted by the policymaker in designing the monetary policy.

The study on the determinants of inflation is important as the results will provide higher understanding on the transmission of shocks and the inter-relationship between inflation and economic factors. Hence earlier actions can be taken to avoid high inflation and the negative effects of inflation on economy. There are a lot of studies investigating the causes of the inflation and the findings are many and varied. In this study, we seek to identify the causes of inflation between two groups of countries, i.e. high and low inflation countries. The ARDL model is applied to reveal the short run impact and long run impact of each factor on inflation. Applying the dynamic panel approach, our results reveal that GDP growth and imports of goods and services have significant long run impact on inflation in low inflation countries. Money supply, national expenditure and GDP growth on the other hand, have significant long run impacts on inflation in high inflation countries. These variables have limited short run impacts on inflation.

The remaining paper is organized as follows: section 2 provides discussion on literature review, section 3 explains the data and methodology applied, section 4 summarizes the main findings and section 5 concludes and finalized the paper.

II. LITERATURE REVIEW

There are several empirical studies undertaken to identify the possible determinants of inflation based on different techniques and time period. Although the topic is no more new, there are continuing studies on this topic to reveal the possible factors affecting the movement of inflation. These studies report different results.

The variables that have been repeatedly taken by researchers to explain inflation are money supply, exchange rate, interest rate, inflation expectation, imported inflation and Gross Domestic product (GDP). For instance, [6]-[8] discussed that the money supply is a significant determinant of inflation. However [9] and [10] found that there is no evidence to show money supply affect in inflation.[7]-[9], [11], [12] also reported that exchange rate contributed to the rise in inflation but [13] in her study of determinant of inflation in Ethiopia found that exchange rate has a negative and insignificant impact. Nominal interest rate has positive pressure on inflation as discussed by [8], [11] and [14].

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However [12] reported the nominal interest rate has insignificant influence on the inflation. [6] and [7] in their study also found Gross Domestic Product (GDP) has a positive influence on inflation but [11] claim that GDP has negative relationship with inflation. [15] also discussed inflation expectation and imported inflation have positive pressure on inflation.

Previous studies apply different approaches in detecting the determinants of inflation based on the long run estimate and short run estimate. These methods include Co-integration, Vector Error Correction, Granger Causality, Vector Autoregression (VAR), Augmented Dickey-Fuller (ADF), Panel unit root test and Ordinary Least Squares (OLS). Most of the studies apply Co-integration method (for long run estimate), Vector Error Correction (for short run estimate) and Granger Causality. For instance, [6] applied these three methods in his study and probes that money supply, GDP and government expenditures presenting positive impression on inflation. [16] also applied these three methods in the study of determinants of inflation in Albania. They found exchange rate and money supply have significant influence however real income has insignificant influence on inflation[8] apply Co-integration and Vector Error Correction method in the study and found that real output, nominal exchange rate, broad money supply, interest rate and fiscal deficit are positively contributed towards inflation in Ghana. [9] also applied Co-integration and Vector Error Correction method to investigate the determinants of inflation in Poland and found that the labour sector, external sector and real exchange rate have positive influence on inflation. There are some papers applied Ordinary Least Square (OLS) to trace the causes of inflation. For instance, [17] applied Co-integration and OLS method in the study and found monetary is a main factor of inflation in Paraguay. [12] also applied Co-integration and OLS method to investigate the causes of inflation in Pakistan and they found that exchange rate, GDP and value of imports are significant however budget deficit and interest rate are insignificant.

Most of the studies are focused on developing countries such as Pakistan, Sri Lanka, Ukraine, Albania, Poland, Ghana and Jordan. For instance, [6], [11] and [15] discussed their study in Pakistan. [16] focused the study in Albania, [9] focused the study in Poland and [18] focused the study in Jordan. There are also a few studies focus on the Gulf Cooperation Council (GCC) country such as [19] and [20].

In general, most studies focus the analysis in the developing countries. The common approaches used to investigate the determinants of inflation are Co-integration and Vector Error Correction method. Most of the studies also find that the main determinants affecting inflation are money supply, interest rate and exchange rate.

III. DATA AND METHODOLOGY

The study uses the annual data on inflation, money supply, national expenditure, imports of goods and services and gross domestic product growth. These data are obtained from IMF database covered the time period from 1970 to 2011 in 28 countries. These 28 countries are categorized into two groups as high inflation countries and low inflation countries, see

Table I.

A. Grouping and Variables

TABLE I: THE GROUPS OF COUNTRIES						
1. Iran, Islamic Rep.	1. Australia					
2. Argentina	2. Canada					
3. Uruguay	3. Cyprus					
4. Sudan	4. Denmark					
5. Burundi	5. Finland					
6. Colombia	6. Italy					
7. Ecuador	7. Malaysia					
8. Ghana	8. Malta					
9. Iceland	9. Morocco					
10. Indonesia	10. Netherlands					
11. Israel	11. Norway					
12. Mexico	12. United States					
13. Turkey	13. Bahamas					
14. Uruguay	14. Singapore					

TADI	E IL THE DE	CONTRACTOR	VIDIO
LABL	E IL THE DE	SCRIPTION OF	F VARIABLES

No.	Variable	Unit	Sources
1	Inflation, (<i>inf</i>)	annual %	International Monetary Fund, International Financial Statistics and data files.
2	Money supply, (m4)	annual %	International Monetary Fund, International Financial Statistics and data files.
3	Gross national expenditure (ne)	% of GDP	World Bank national accounts data, and OECD National Accounts data files.
4	Imports of goods and services , (<i>imp</i>)	% of GDP	World Bank national accounts data, and OECD National Accounts data files.
5	GDP growth, (gdpgrowth)	annual %	World Bank national accounts data, and OECD National Accounts data files.

*Sources: IMF database.

To carry out the study on the determinants of inflation, we obtain the data from the International Monetary Fund (IMF) database. The variables involved in this study are inflation, money supply, national expenditure, imports and GDP growth. The study uses the annual data from years 1970 to 2011 for 28 countries. These 28 countries are categorized into two groups as high inflation countries and low inflation countries.

The data used in this study include inflation, money supply, national expenditure, imports and GDP growth. Table II shows the list of data with their unit of measurement and sources.

According to IMF database, these data are explained as follows. Inflation is measured by consumer price index reflects the annual percentage change in the cost to the average consumer of acquiring a basket of goods and services that may be fixed or changed at specified intervals, such as yearly. Money supply (m4) is an average annual growth rate in money and quasi money. Money and quasi money comprise the sum of currency outside banks, demand deposits other than those of the central government and the time savings and foreign currency deposits of resident sectors other than the central government. Gross national

expenditure (ne) defined as the sum of household final consumption expenditure (formerly private consumption), general government final consumption expenditure (formerly general government consumption), and gross capital formation (formerly gross domestic investment). Imports of goods and services (imp) represent the value of all goods and other market services received from the rest of the world. They include the value of merchandise, freight, insurance, transport, travel, royalties, license fees, and other services, such as communication, construction, financial, information, business, personal, and government services. They exclude compensation of employees and investment income (formerly called factor services) and transfer payments. GDP growth (gdpgrowth) is an annual percentage growth rate of GDP at market prices based on constant local currency. Aggregates are based on constant 2000 U.S. dollars. GDP is the sum of gross value added by all resident producers in the economy plus any product taxes and minus any subsidies not included in the value of the products. It is calculated without making deductions for depreciation of fabricated assets or for depletion and degradation of natural resources.

B. ARDL Model

The study employs the Error Correction Model based on the Autoregressive Distributed Lag (ARDL) modeling to estimate the relationship between inflation and its variables. The models are estimated using Mean Group (MG) estimator and Pooled Mean Group (PMG) estimator. A Hausman test is conducted to suggest a preferred estimator for the study.

In estimating the determinants of inflation, using the known sources, the general model is specified as follows:

$$inf = f(m4, ne, imp, gdpgrowth)$$

The equation specifies that inflation (*inf*) is a function of money supply (*m4*), national expenditure (*ne*), imports (*imp*) and gross domestic product growth (*gdpgrowth*). The relationship is investigated by using Autoregressive Distributed Lag (ARDL) model and Error Correction Model (ECM). [21] stated, sufficient augmentation of the order of the ARDL model can simultaneously correct for the problem of residual serial correlation and endogenous regressor. Mathematically we specify an ARDL model with *p* lags of *Y* and *q* lags of *X*, ARDL (*p*, *q*) as [21]: In this paper, we do not consider the fix effect specification.

$$y_{i,t} = \sum_{j=1}^{p} \lambda_{i,j} y_{i,t-j} + \sum_{j=0}^{q} \delta'_{i,j} x_{i,t-j} + \varepsilon_{i,t}$$
(1)

where the number of countries i = 1, 2, ..., N; number of periods t = 1, 2, ..., T; $y_{i,t}$ is variable for inflation; $x_{i,t}$ are $k \times 1$ vector of explanatory variables for countries i, $\delta_{i,j}$ are $k \times 1$ coefficient vectors; $\lambda_{i,j}$ are scalars and $\varepsilon_{i,t}$ is a disturbance term with a zero mean and a finite variance, σ^2 . (1) can be re-parameterized and expressed into an error correction model written as:

$$\Delta y_{i,t} = \phi_i y_{i,t-1} + \gamma_i x_{i,t} + \sum_{j=1}^{p-1} \lambda_{i,j}^* \Delta y_{i,t-j} + \sum_{j=0}^{q-1} \delta_{i,j}^{*'} \Delta x_{i,t-j} + \varepsilon_{i,t} \quad (2) \qquad \text{wh}$$

where

$$i = 1, 2, ..., N$$
; $t = 1, 2, ..., T$; $\phi_i = -\left(1 - \sum_{j=1}^p \lambda_{i,j}\right)$; $\gamma_i = \sum_{j=0}^q \delta_{i,j}$

$$\lambda_{i,j}^* = -\sum_{m=j+1}^p \lambda_{i,m}, \ j = 1, 2, ..., p-1 \text{ and } \delta_{i,j}^* = -\sum_{m=j+1}^q \delta_{i,m}$$

 $j = 1, 2, ..., q - 1, \phi_i \neq 0$ is the speed of adjustment.

The long-run relationship between $y_{i,t}$ and $x_{i,t}$ can be written as:

$$y_{i,t} = -\left(\gamma_i' / \phi_i\right) x_{i,t} + \eta_{i,t}$$

where $\eta_{i,t}$ is a stationary process and $\theta_i = -(\gamma_i / \phi_i)$ are the long-run coefficients on $x_{i,t}$ which are same across groups. The panel data model is solved using the likelihood approach where the log-likelihood function can be written as:

$$\ell_{T}(\Upsilon) = -\frac{T}{2} \sum_{i=1}^{N} \ln 2\pi \sigma_{i}^{2} - \frac{1}{2} \sum_{i=1}^{N} \frac{1}{\sigma_{i}^{2}} (\Delta y_{i} - \phi_{i} \xi_{i}(\theta)) \mathcal{H}_{i} (\Delta y_{i} - \phi_{i} \xi_{i}(\theta))$$
(3)

where

$$H_i = I_T - W_i \left(W_i W_i \right)^{-1} W_i$$
 given that

$$W_{i} = (\Delta y_{i,t-1,...,} \Delta y_{i,t-p+1}, \Delta x_{i,t}, \Delta x_{i,t-1}, ..., \Delta x_{i,t-q+1})$$
 and

$$\Upsilon = (\theta', \phi', \sigma')'; \ \phi = (\phi_{1}, ..., \phi_{N})'; \ \sigma = (\sigma_{1}^{2}, ..., \sigma_{N}^{2})'$$

In order to maximize the estimation of long-run coefficients θ and the error-correction coefficients ϕ_i , (3) is maximizing with respect to Υ . The maximum likelihood estimators is referred to as the pooled mean group (PMG) estimators by considering the homogeneity restrictions on the long-run coefficients and taking the means of the estimates (see [21] for details).

C. Lag Length Selection

The information criteria are often used as a guide in model selection. There are many lag length criterion can be employed to determine the autoregressive lag length but in this study we estimate the autoregressive lag length by using Akaike information criterion (AIC) and Bayesian information criterion (BIC). AIC and BIC function is largely based on the log likelihood function, the lower AIC and BIC imply the model is closer to be the true model. Stata IC 12 as the statistical software calculates the AIC and BIC based on the log likelihood function defined as:

$$AIC(p) = -2\left(\frac{LL}{T}\right) + \frac{2t_p}{T}$$
$$BIC(p) = -2\left(\frac{LL}{T}\right) + \frac{\ln(T)}{T}t_p$$

where

LL is the maximized log likelihood function for the estimated model.

 t_p is the total number of parameters in the model.

T is the number of observations.

IV. RESULTS

A. Lag Length Selection

The Autoregressive Distributed Lag (ARDL) model and Error Correction Model (ECM) are used to investigate the determinants of inflation. In this study, we have an endogenous variable (inflation) and 4 exogenous variables (money supply, national expenditure, imports, GDP growth). We construct the ARDL using different combination up to at most lag one for each variable. Table III shows the results of AIC and BIC for different lag length combinations of ARDL model. The ideal lag length is the minimization of the AIC and BIC functions. Base on the result, we note that ARDL (1,1,1,1,1) is the ideal model for the low inflation countries and ARDL (1,1,1,0,0) is the ideal model for high inflation countries.

	TABLE III: LAC	G LENGTH SELEC	TION	
ARDL	Low Inflation Countries		High Inflation	
MODEL			Countri	es
	AIC	BIC	AIC	BIC
(1,0,0,0,0)	2530.94	2556.81	6112.51	6138.48
(1,1,0,0,0)	2528.54	2558.71	6085.29	6115.56
(1,1,1,0,0)	2518.30	2552.75	6077.19	6111.78
(1,1,1,1,0)	2477.73	2516.49	6078.65	6117.55
(1,1,1,1,1)	2439.18	2482.21	6079.89	6123.11

B. Estimation

Table IV presents the estimation result for both groups of countries based on the PMG estimator. There are 4 exogenous variables in our study for low inflation countries which are m4, ne, imp and gdpgrowth. For high inflation countries, there are only two parameters (m4 and ne) involved in our investigation.

From Table IV, we observe that gdpgrowth has significant negative long run impact on inflation low inflation countries. Every 1% increase in gdpgrowth induces to 1.19% increase in inflation in low inflation countries. Therefore, inflation-gdpgrowth trade-off is in low inflation countries.

The positive coefficient on changes in excess money supply implies that increases in money supply have generated long run negative impact on inflation in high inflation countries. Result shows that with 1% rise in money supply will lead to 0.77% increase in inflation. However, there is no evidence shows that excess money supply in long run will influence inflation in low inflation countries.

Another variable that give long run effect on inflation in high inflation countries is national expenditure. Every percent increase in national expenditure will leads to 0.50% decrease in inflation.

Imports of goods and services also play an important role in determining inflation for low inflation countries. Negative coefficient on imports implies that it has positive impact on inflation. 1% increase in imports will lead to 0.054% decrease in inflation.

The coefficient of ECT_{t-1} is the speed of adjustment which adjusts for the long run impacts on variables. The results show negative values for both countries and statistically significant at 1% level. The negative values in speed of adjustment induce the impact of shocks on inflation are declining over time.

The finding also shows that there are no short run relationship between inflation and variables for high inflation countries. However, money supply, imports and gdpgrowth have short run impact on inflation in low inflation countries. Every 1% increase in money supply and gdpgrowth will lead to 0.031% and 0.30% decrease in inflation respectively. These two determinants show positive impact on inflation. The result also indicates that imports of goods and services have negative impact on inflation with every 1% rise in imports result 0.39% rise in inflation.

TABLE IV: EMPIRICAL RESULTS OF PMG				
	Low Inflation	High Inflation		
	Countries	Countries		
Variable	Coef	Coef		
	(P > z)	(P > z)		
m4	0.0710	0.7729***		
	(0.162)	(0.000)		
ne	-0.0410	-0.5016**		
	(0.489)	(0.025)		
imp	-0.0541*	-		
	(0.096)			
gdpgrowth	1.1935***	-		
	(0.000)			
Speed	-0.2003***	-0.5280***		
of	(0.000)	(0.000)		
adjustment				
$\Delta m4$	-0.0308**	-0.0258		
	(0.021)	(0.807)		
Δne	-0.0686	2.5953		
	(0.598)	(0.336)		
Δimp	0.3912***	-		
	(0.004)			
∆gdpgrowth	-0.3024***	-		
	(0.000)			
Maximized log likelihood	-1042.083	-2267.074		
Number of parameters	4	2		
Notes:				

*** denoted the 1% significant level

** denoted the 5% significant level

* denoted the 10 % significant level

V. CONCLUSION

This paper investigates the determinants of inflation in two different levels inflation groups on the annual data for the period 1970 to 2011. The study applies ARDL and EC models to investigate the relationship between exogenous variables (money supply, national expenditure, imports of goods and services and GDP growth) and endogenous variable (inflation) for long run effects and short run effects. The main findings in this study are as follows. For the long run impact in high inflation countries, money supply and national expenditure have significant effect on inflation. National expenditure implies positive impact on inflation but money supply implies negative impact on inflation. In low inflation countries, GDP growth has negative impact on inflation and imports of goods and services have positive impact on inflation. The study for short run effect for both countries shown that there are none of the variables have significant impact on inflation in high inflation countries. The study reveals that all exogenous variables have significant short run impact on inflation in low inflation countries except national expenditure. The findings also indicate that there is only imports of goods and services has negative impact on inflation and the rest of the variables give positive impact on inflation in low inflation countries. Generally the determinants of inflation with the significant negative impact should be controlled to enhance the stability in economy.

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Research on the Causal Relationship between Antecedent Factors, Tourist Satisfaction and Destination Loyalty

Zhu Mingfang and Zhang Hanyu

Abstract—The satisfaction measures are often required by a theoretical construct in system of cause-effect relationships. Many scholars consider causal linkage between the causes and results of consumer satisfaction as a key focus. However, it was shown that more than 30 factors are used in different research as antecedents and/or evaluative factors for destination satisfaction and loyalty. Thus leave room for further research in this controversial topic. The objective of this paper is to develop an acceptable theoretical model based on major established behavioral theories and attribute-level approach. The theoretical model will include intrinsic, extrinsic (brand, warranty, price) cues, quality, risk, destination image, tourist attributes and satisfaction. The model needs further research on its generality and robustness.

Index Terms—Tourist satisfaction, destination loyalty, antecedent factor.

I. INTRODUCTION

A. Introduce the Problem

Without doubt, some key decisions on products and services provided by destinations is following outcome of satisfaction analysis. Tourist satisfaction is widely accepted as being of central reference to destination management organization and tourism-related sectors. High tourist satisfaction contributes to enhanced reputation of tourism product providers and of the whole destination. It also increases consumer loyalty, lower cost of future transactions and reduced price elasticity [1], [2].

The consumer satisfaction assessment has attracted interest from many scholars and industry representatives, which led to the development of various national and regional consumer satisfaction indexes. It is common for tourism-related businesses, government agencies and scholars to carry out tourist satisfaction surveys at both the micro (sector) and macro (destination) levels. Less effort put into understanding the influencing factors which will lead to higher satisfaction in future. Fortunately, the satisfaction measures are often required by a theoretical construct in system of cause-effect relationships. More and more scholars consider causal linkage between the causes and results of consumer satisfaction as a key focus

While most present theoretical models of causal relationship of satisfaction either utilized models

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expectation/disconfirmation extending to tourist characteristics like Song et al.(2010) and ACSI, or attempt to utilize destination image, marketing program as antecedents of satisfaction. None tried to study the relationship between overall TSI, attribute TSI, tourist attributes, destination image and other factors. It is complicated because of locating antecedents of tourist satisfaction and destination loyalty.

B. Explore Importance of the Problem

Reasons listed in the following paragraphs.

Firstly, Tourism is a high-integrated system that has a number of sectors such as accommodation, transportation, catering, travel intermediaries (tour operators and travel agencies), retailing, visitor attractions and tourism-related public agencies. Hence, tourists overall satisfaction is affected by each component involved in tourist's experiences at the destination. Although many tourism businesses body have been carrying out tourist satisfaction surveys, and also launched one-off tourist satisfaction investigations at destination level, there has not been a continuous evaluation system which facilitates the assessment of tourist satisfaction on a basis at both sectoral and destination levels.

Secondly, many bodies acknowledged a high customer defection despite satisfaction ratings [3]. High survey satisfaction index do not guarantee the increase the number of visitors and improve the destination's revenue. Based on this, some researchers criticize the mere satisfaction measurement and shift to the study of causal relationship of satisfaction. The mere satisfaction indices and measures are often required by a theoretical construct in system of cause-effect relationships. Many scholars consider causal linkage between the cause and results of consumer satisfaction as a key focus [3]-[5].

Thirdly, it was shown that more than 30 factors are used in different research as antecedents and/or evaluative factors for loyalty. Thus leave room for further research in this controversial topic.

This study aims to solve above problem by adopting a model of the antecedents and satisfaction decisions. The theoretical framework of tourist satisfaction evaluation guide government agencies, sectors of the tourism industry and the public with needed information for decision-making and planning. And the causal framework of tourist satisfaction and destination loyalty provides related stake holders the influencing factors between tourist and destination revenues.

II. RELATED LITERATURE REVIEW

A. Satisfaction Evaluation

Various companies draw a lot of attention to monitor the

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satisfaction level of their consumers over time due to its importance. A number of satisfaction barometers or indices have been developed for products and services in the last decades. Among research papers, expectation/ disconfirmation is most popular model among studies conducted to evaluate consumer satisfaction. The other widely used version includes the American customer satisfaction index (ACSI) operating since 1994, Swedish customer satisfaction barometer (SCSB) operating since 1989, and the Norwegian customer satisfaction barometer since 1996. The last model was modified and improved from time to time (Michael D. Johnson et al., 2001). Generally, five elements are expectation, disconfirmation, perceived performance, satisfaction and customer loyalty.

As an integrated system consisting of sectors such as accommodation, catering, transportation, attractions, and so on, tourism industry needs to be considered as a whole system when assessing tourist satisfaction. Hence, some modifications should be made to satisfy the tourist destination on benchmarking tourist satisfaction index (TSIs). Moreover, tourists list all potential destinations when making decisions on where to vacation. Within a destination, many no-relevant businesses as well as local government organizations affect the visitor experience and post-purchase behavior in different ways. Benchmarking overall destination tourist satisfaction is challenging since so many different elements involved in tourist satisfaction (Oliver, Swan, 1989). Tourism researchers show interests in measuring both overall tourist satisfaction [6] and tourist satisfaction at the service sector level, like Restaurants, accommodation, Travel agencies, Attractions, Retail shops, Packaged tours[7]-[12].

Although the research has gained increasing popularity at both levels, few overall TSIs are aggregated based on specific service/production. One of the major contributions of this study is to study the association between tourist satisfaction with tourism-related sectors and the overall destination satisfaction. Haiyan Song et al. (2010) proposed the Hong Kong PolyU TSI to monitor the changes of tourist satisfaction on both levels. Taken Industry/sector-level TSIs into consideration, a sound theoretical framework similar to ACSI aggregated to overall destination satisfaction based on the sectoral-level satisfaction. This weighting aggregation scheme of TSI used by Haiyan Song et al. (2010) is quite good for consuming goods and service and free-of-charge public services which a tourist encounters during the visit. However, it shows the hypothesized path between tourist characteristics and other constructs are not significant according to theoretical framework adopted by Song et al. (2003). The tourist characteristics should apply influence to tourist satisfaction in some way and is believed that the model needs to be reconstructed.

The review suggests that there is a great demand for the development of a more concise evaluation system in order to assess tourists' overall satisfaction. Such a system should have a sound theoretical underpinning and is capable of integrating both the sectoral and destination satisfaction levels over time.

B. Causal Relationships of Antecedents, Satisfaction and Loyalty

Both academics and industries show interests to have good

understanding of the overall TSI, attribute TSI, and other antecedents like tourist characteristics, consequences and destination image.

Most models of causal relationship either utilize models expectation/disconfirmation extending to tourist characteristics and ACSI, or attempt to utilize destination image as antecedents of satisfaction. This study try to board the scope of related research among overall TSI, attribute TSI, tourist attributes, destination image and other factors.

Although the major driving forces of tourist satisfaction such as perceived quality, tourist expectations, destination image and perceived value were identified, few investigated the relationship between the tourist characteristics including these driving factors, tourist satisfaction and the revisit intentions.

The academies believe the companies caring most is the causes of tourist satisfaction .The relationships among service qualities, customer attributes and customer satisfaction are viewed and much debated research issue [13]. A review reveals an abundance of studies on satisfaction and tourist motivation, but the relationship among the antecedents, the consequences and the overall satisfaction is not fully investigated the causal relationship of tourist characteristics, satisfaction and destination loyalty have been only conceptually discussed.

Some researchers agree the following sequences and look the destination image or travel motivation as the antecedents of tourist satisfaction:

tourist motivation (destination image) \longrightarrow tourist satisfaction \longrightarrow destination loyalty.

Both Destination image and tourist travel motivation are considered as causes of tourist satisfaction, while tourist loyalty or complaint is listed as the results of satisfaction.

Meanwhile, the firm show interests to the relationship of customer characteristics in consumer satisfaction levels when formulating effective marketing strategies such as product positioning, market segmentation, pricing, (Lai K. Chan et al. 2001). Instead of using tourists'expectations and perceptions of product performance, a tourist characteristics construct is adopted into the hypothetical models utilizing in this research.

C. Results and Consequences of Satisfaction

Repeat visits and/or recommendations to others are referred to as tourists' loyalty in most tourism paper, which is one of the key indicators to apply the marketing strategies [14]. Repeat visitors not only provide a source of income, but may also generate positive word of mouth [15].

On the other hand, dissatisfied consumers show intent of existing/switching and voicing their complaints. Since exit/switch cannot directly be measured but can be indirectly represented by loyalty, the study adopts tourist loyalty to reflect the total consequences of tourist satisfaction. The common sense that increased consumer satisfaction will decrease the incidence of complaints and increase appraisals. In other words, loyalty is a proxy for repeat visit, which studies have shown that there are differences in the perception of satisfactions between people.

III. CONCEPTRUAL FRAMWORK OF DESTINATON LOYALTY

As we discussed before, this research will focus on the antecedent factors of destination satisfaction and loyalty. To truly understand the plethora of influencing factors on satisfaction thus loyalty, a framework that provides a coherent organization of these factors would be helpful.

The evolution of the model progressed inductively beginning with the causal relationships utilizing expectation/disconfirmation model like ACSI or destination image where literatures we mentioned in the last paragraph. Over about a 5 year period the concepts and propositions behind the model emerged from the ground up, maturing in its present form. In summary form, the grounded research comprised the following elements in progression:

- Cooperative research with Hong Kong Polytechnic University on tourist satisfaction index at 2009-2010. The outcome includes a serial of reports on TSI of Hong Kong and Shenzhen
- 2) Feedback, debate and introspection stemming from papers on the topic of destination loyalty presented at several conferences

A. Possible Antecedent Factors

After reviewing more than 25 empirical studies (Agarwal and Teas (2001, 2004; Petrick 2004a, 2004b; Chi and Qu 2008; Lee, Graefe, and Burns 2007)[16]-[20] (not included all for page limitation), it was found that different authors used more than 30 factors in different research settings as antecedents and/or evaluative factors for loyalty. In fact, a model for loyalty research should incorporates additional contextual factors that may influence the process of consumer choice decision making, like risk and warranty, religious belief etc. As it is too difficult to build a comprehensive model using all factors, we thus developed an acceptable model based on major established behavioral theories and attribute-level approach. Thus the theoretical model will include intrinsic, extrinsic (brand, warranty, price) cues, quality, risk, destination image, tourist attributes and satisfaction.

B. Conceptual Model of Destination Loyalty

This framework tries to include all the dimensions we discussed before and is provided in Fig. 1.



Fig. 1. Conceptual model of destination loyalty.

The proposed theoretical model (see Fig. 1) is based on the expectancy-disconfirmation framework which has been applied in destination satisfaction evaluations. The author includes the tourist characteristics and situational factors (intrinsic and extrinsic factors) as antecedent factors of expectation, perceived performance, assessed value and tourist satisfaction which extend general the expectancy-disconfirmation framework to be a second step model. The researchers could do further study on these to find out the causal relationship between these factors. Whether the tourist characteristics and situational factors affect tourist satisfaction directly or they affect satisfaction via expectation, perceived performance and assessed value. To investigate the causal linkage and address the influential factors of tourists' loyalty to a destination, in particular their revisit intention and recommendation intendancy has an important value for policy-makers for future destination modification and marketing program.

C. Supposed Methodology

This study will administer a questionnaire which use 6 point likert scale (1= Strongly Disagree and 6= Strong Agree) as a first wave of data collection of a large research project. To ensure a high level of clarity, the questionnaire will be translated through the double translation method.

Partial least Squares (PLS) v.3.00 was used to analyze the data as it is most appropriate as the model incorporated both formative and reflective indicators [21]. PLS considers all path coefficients simultaneously (thus allowing analysis of direct, indirect, and spurious relationships) and estimates multiple individual item loadings and weights [22]. Besides, PLS can deals minimum sample of 100 [23]. It does not require distributional assumption about sample data. The primary goal of this research is to investigate the antecedent determinants of destination loyalty (i.e., explaining variance) in an exploratory rather than confirmatory mode, (as it is part of PhD) rendering prediction-based structural equation modeling (i.e., PLS) more appropriate [25].

IV. CONCLUSION

Both academics and industries believes the good understanding of the overall TSI, attribute TSI, and other antecedents like tourist characteristics, consequences and destination image is a major topic in destination management. Destination loyalty is very complicated and heterogeneous whose influencing factors have attracted more attention. Antecedent factors have been studied as an efficient means to improve destination loyalty. Most models of causal relationship either utilize models expectation/disconfirmation extending to tourist characteristics and ACSI, or attempt to utilize destination image as antecedents of satisfaction. This study proposed a conceptual model of the causal relationships try to board the scope of related research among overall TSI, attribute TSI, tourist attributes, destination image and other factors.

Although the major driving forces of tourist satisfaction such as perceived quality, tourist expectations, destination image and perceived value were identified, few investigated the relationship between the tourist characteristics including these driving factors, tourist satisfaction and the revisit intentions.Our conceptual model of causal relationships between antecedent factors and tourist satisfaction, destination loyalty needs more scrutiny to prove its generality and robustness.

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Evaluation of Croatian Development Strategies Using SWOT Analyses with Fuzzy TOPSIS Method and K-Means Methods

Bruno Trstenjak, Andrijana Kos Kavran, and Ivana Bujan

Abstract—The purpose of this paper is to analyse Croatian national development strategy and Croatian local/regional development strategies. Upon defining the purpose we can define the main goal of this paper and which is creation of a tool based on funny logics which will give results on whether the chosen areas of analysed strategies are correspondent or not. For that purposes linguistic variables for areas of importance of national and regional development strategies have been defined with corresponding weight impact factors. Defined areas have been of various development priorities and have been sorted according to SWOT analysis components. Upon definition of variables and weight impact factors the analysis has been conducted.

Index Terms—Development strategy, fuzzy TOPSIS, national strategy, k-means clustering.

I. INTRODUCTION

To start the story about the national and regional development strategies it is necessary to define personal development. We can say that development enriches the lives of individuals, reduces poverty, and improves well-fare, raises the quality of life in general. As it affects positively the individuals it also positively affects nations and regions. Given this definition of development, it is clear that a development strategy must be focused on transformation of society in identifying the barriers to, as well as potential catalysts for change [1]. When discussing a national level it is clear that the process of creation national and regional development strategy should be planned in details before adoption. National strategies, as well as local/regional strategies should include the component of sustainable development in every sector of an economy. Yet sustainable development touches many sensitive questions and values, therefore progress is somewhat slow [2].

When states and local/regional authorities create development strategies they try to engage as many stakeholders as possible and during the process they create SWOT analysis. SWOT analysis is a marketing tool used in marketing planning but also in many other forms of planning [3]. For the purposes of national SWOT analysis local stakeholder are engaged in the process of strategy development to contribute with their current issues, expectations and provide possible solutions. However, in some cases there is no correspondence between local/regional and national level. From the aforementioned arises the main goal of this paper, which is to create a tool with the help of fuzzy logics to discover to what extent are areas of Croatian national development strategy correspondent to the areas of local/regional development strategies in Croatia.

The beginnings of fuzzy logics started in 1965 with the creation of fuzzy theory by Lutfi Zadeh [4] as an extended concept to the traditional mathematical binary logics. Fuzzy logic is used in many areas like business management, computer sciences and artificial intelligence. Fuzzy logic presents powerful mathematical tool for modelling of terms whose values are not clearly defined but are expressed in linguistic terms. The logic allows conclusions on the basis of unclear, equivocal and imprecise information.

Fuzzy TOPSIS method is one of the most popular methods used in multi-criteria decision making (MCDM). The method was developed by Hwang & Yoon (1981). MCDM introduces the concept of criteria, weight values, ranking of alternatives and comparison of alternative solutions according to the ideal solution. The method enables evaluation of alternative solutions, determination of their positive or negative deviations from the ideal solution. According to the methodology of decision making, the best alternative is the one where the deviation is the smallest [5].

When discussing SWOT analysis, the assessment is usually based on the comparison of positive and negative attributes/characteristics. To the assessment of the quality usually influences subjective component of an evaluator. By introducing the fuzzy TOPSIS method we can solve the aforementioned influence and deterministic result is obtained with the help of mathematical model. This article presents the evaluation methods of local strategies and their harmonization with national strategies. The development model of SWOT fuzzy TOPSIS framework is presented, as well as its construction and SWOT analysis methods. This article also describes in a detailed way measurements of SWOT analysis of local development strategies and presents the algorithm of data clustering.

Besides evaluation of development strategies, here are also presented grouping types of SWOT analysis according to mutual characteristics. By using K-means algorithm, clustering of SWOT analysis according to corresponding criteria has been conducted. K-means algorithm enables grouping of objects according to mutual characteristics of all defined criteria.

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II. NATIONAL AND REGIONAL DEVELOPMENT STRATEGIES

A. SWOT Analysis

SWOT analysis represents the overview of strengths, weaknesses, opportunities and threats. Its execution in all areas of business in crucial, therefore companies, states, non-profit organizations and other organizations create it. The purpose of SWOT analysis is to detect company's position, provide an insight into internal strengths and weakness, as well as external threats and opportunities. Strengths and weaknesses have the greatest influence on company's success and they are measured according to competence, while opportunities arise when activities in a company benefit the organization [3].

Strategy of development of a country is necessary to define specific areas which are important for growth. Some counties and regions have to prepare development strategies because that is their legal obligation. In their strategies future development is indicated, as well as areas which should be improved. All projects which are submitted for financing have to be harmonized with local development strategy that is they have to support the development of areas defined in the strategy. SWOT analysis is an integral part of development strategies and is made upon overview of capacities of certain region. With SWOT analysis it is possible to define the position of certain region compared to the development of state. The focus is to be put on equal development therefore the harmonization between strategies and SWOT analyses should be made.

B. Development Strategies

Development strategy of a country has to define specific areas where a country expresses special interest for its development. Development strategies are extremely important and give directions for future investments for a region. Such local development strategies have to be harmonized with national development strategy to enable balanced investments and development of a country.

III. SWOT FRAMEWORK

Framework is designed as a tool and support when measuring harmonization of regional development strategy with the guidelines of strategy of a country. Framework consists of few mutually linked modules, which give opportunities to a user to define SWOT analysis, measure SWOT results and make evaluations. Framework is designed in a modular way with a purpose to adapt to user's needs as much as possible.

A. Framework Structure

As mentioned earlier in the paper, framework is made of few linked modules. Fig. 1 presents the structure of concept of SWOT framework.

Framework consists of four basic modules: National strategy module, GUI – SWOT module, Fuzzy TOPSIS module and Evaluation strategies module. National strategy module is the first and perhaps the most important module where the whole development strategy starts. The module enables the defining of strategy guidelines of a national development strategy. In the module are defined areas of strategy development on national level, as well as priorities and importance of development of certain areas. Every area of importance doesn't have to have a strong influence in the

future development of a country. In this model, the term of importance is connected with weight values, values used in fuzzy TOPSIS module. Defined areas and development priorities are entered in the database. GUI - SWOT module enables to the user definition of individually defined SWOT regional development analysis. In the mentioned module every characteristic in SWOT analysis is connected with national areas and its weight influences on national navel. This connection is very important for later evaluation of certain SWOT analysis. The third module measures SWOT analyses. The module incorporates fuzzy logics and fuzzy convert membership function which linguistic variables/characteristics and crisp values. In the mentioned way the described characteristics of SWOT analysis and criterions become fuzzy numbers suitable for calculations. The second part of the module, TOPSIS method measures SWOT analysis and its harmonization with national strategy, while taking into account the importance of area in a development strategy. The last module is Evaluation strategies module, foreseen for evaluation of SWOT analyses, determination of quality, ranking of SWOT analyses compared to national levels. Module is also foreseen for analysis of similarities of development strategies and their clustering according to defined criterion in particular SWOT analysis.



Fig. 1. Framework structure.

B. Fuzzy TOPSIS Model

The word fuzzy means something unclear, slightly cloudy and foggy. In fuzzy logic membership of an element in a given set is not precisely defined, its membership is expressed in percentages. Membership degree μ is defined in the interval $\mu \in [0, 1]$. The degree of membership is determined by fuzzy membership functions, a higher value defines a higher degree membership of fuzzy set.

Linguistic variables - fuzzy logic uses linguistic variables for describing the input variables and results obtained by fuzzy model. Linguistic variable is presented with a triangular fuzzy number.

Membership function – the function which determines the degree of membership linguistic variables in a fuzzy set. The function must be scaled between the values 0 and 1.

$$A \leftarrow \{ (x_i, \mu_A(x_i) \mid x_i \in U) \}$$
(1)

where the $\mu_A(x)$ is a membership function and A is fuzzy set. Membership function value is

$$\mu_A \colon X \to [0, 1] \tag{2}$$

Triangular fuzzy number - number defined by triangular membership function, a triplet A = (a, b, c).

Fuzzy TOPSIS method tries to estimate as far is a particular alternative near the ideal solution. Distance of alternatives can be in positive or negative direction. The method calculates two values: the Fuzzy Positive Ideal Solution (FPIS), which represents a benefit and the Fuzzy Negative Ideal Solution (FNIS), a cost [6], [7].

The mathematics concept of Fuzzy TOPSIS can be described as follows [8]:

Step 1: Determination of Linguistic Terms, Membership Functions and the weighting of evaluation criteria.

Determine the linguistic variables for all criteria. Each linguistic variable is assigned a set of membership functions; determine weights of evaluation criteria and the ratings of alternatives are considered as linguistic terms.

Step 2: Construct the fuzzy decision matrix.

Decision matrix is directly associated with linguistic variables and the criteria alternatives. If assumed that the number of criteria is n and the count of SWOT analysis is m, fuzzy decision matrix will be obtained with m rows and n columns.

Step 3: Normalize the fuzzy decision matrix.

Normalization of fuzzy decision matrix is accomplished using linear scale transformation. The calculations are done using formulas (3), (4).

$$\tilde{r}_{ij} = \left(\frac{a_{ij}}{c_j^+}, \frac{b_{ij}}{c_j^+}, \frac{c_{ij}}{c_j^+}\right) and c_j^+ = \max_i c_{ij} \ (benefit)$$
(3)

$$\tilde{r}_{ij} = \left(\frac{a_j^-}{a_{ij}}, \frac{a_j^-}{b_{ij}}, \frac{a_j^-}{c_{ij}}\right) and \ a_j^- = \min_i a_{ij} \ (cost)$$
(4)

In quality assessment of SWOT analysis we use the criteria whose value indicates the benefit, we use formula (3).

Step 4: Calculate the weighted fuzzy decision matrix

The weighted normalized fuzzy decision matrix V is computed by multiplying the weights (w_j) of evaluation criteria with the normalized value r_{ij} from fuzzy decision matrix. The weighted normalized decision matrix \tilde{V} can be represented by Eq. (5):

$$\tilde{V} = \left[\tilde{v}_{ij}\right]_{n \times j}, i = 1, 2, ..., n; j = 1, 2, ..., J,$$
⁽⁵⁾

where

$$\tilde{v}_{ii} = \tilde{r}_{ii}(\cdot)\tilde{w}_i \tag{6}$$

Step 5: Determine the fuzzy positive-ideal solution (FPIS *A*+) and fuzzy negative-ideal solution (FNIS *A*-)

According to the weighted normalized fuzzy decision matrix, in this step we determine the positive and negative displacement from the ideal solution. Their ranges belong to the closed interval [0, 1].

Step 6: Calculate the distance of each alternative from FPIS and FNIS

The distance $(d_j^+ \text{ and } d_j^-)$ of each alternative A^+ from and A^- can be calculated as:

$$d_{i}^{+} = \sum_{j=1}^{n} d(\tilde{v}_{ij}, \tilde{v}_{j}^{+}), i = 1, 2, ..., m$$
(7)

$$d_{i}^{-} = \sum_{j=1}^{n} d(\tilde{v}_{ij}, \tilde{v}_{j}^{-}), i = 1, 2, ..., m$$
(8)

The distance between two fuzzy numbers $a = (a_1, a_2, a_3)$ and $b = (b_1, b_2, b_3)$, can be calculated as:

$$d_{\nu}(\tilde{a},\tilde{b}) = \sqrt{\frac{1}{3}[(a_1 - b_1)^2 + (a_2 - b_2)^2 + (a_3 - b_3)^2]}$$
⁽⁹⁾

Step 7: Calculate the closeness coefficient

The closeness coefficient CC_i is defined to determine the ranking order of all alternatives. The index CC_i indicates that the alternative is close to the FPIS (d_i^+) and far from the FNIS (d_i^-) . The closeness coefficient of each evaluated teacher quality can be calculated as [9], [10]:

$$CC_{i} = \frac{d_{i}^{-}}{d_{i}^{-} + d_{i}^{+}}$$
(10)

C. Linguistic Variables and Importance Weights

In order to determine the quality of regional strategy based on defined guidelines of a national strategy, it is necessary to define linguistic variables which will describe values, assessment criteria and fuzzy membership functions. With the help of fuzzy membership function the importance of specific development area on national level is defined, as well as weight of influence of certain characteristic in SWOT analysis. Functions are used to determine the value of final assessment of strategy evaluation. Table I presents importance weights of national priority areas and Table II presents linguistic variables for evaluation of influence of characteristic/criteria entered in SWOT analysis.

TABLE I: LINGUISTIC VARIABLES FOR AREAS OF IMPORTANCE NATIONAL DEVELOPMENT STRATEGIES

Linguistic variables	Fuzzy number (weight)
Less important (L)	(1.0, 2.5, 4.0)
Average importance (A)	(3.0, 5.0, 7.0)
Very important (V)	(6,0, 8.0, 10.0)

TABLE II: LINGUISTIC VARIABLES FOR IMPORTANCE WEIGHT FOR SWOT ANALYSIS

Linguistic variables	Fuzzy number (weight)
Small Impact (SI)	(1.0, 2.5, 4.0)
Medium Impact (MI)	(3.0, 5.0, 7.0)
Large Impact (LI)	(6,0, 8.0, 10.0)



Fig. 2. The fuzzy membership function.

The fuzzy membership functions for the national development strategies importance are shown in Fig. 2.

IV. FRAMEWORK EVALUATION

For the purposes of this article we will define the importance areas of the national development strategy and its importance weights, as presented in the Table III. Table III presents six areas of strategy development, foreseen guidelines and the importance of investment on national level. All areas don't possess equal development priorities. In the column "weight" weight importance is listed. Areas are taken from the Croatian development strategy [11].

TABLE III: AREAS OF NATIONAL DEVELOPMENT STRATEGY AND IMPORTANCE WEIGHT

Label	Area	Weight
A1	Export	Very important
A2	Competitiveness	Very important
A3	Employment	Average importance
A4	Research and Innovation	Average importance
A5	Infrastructure	Less important
A6	Entrepreneurship	Less important

For the purposes of evaluation, two SWOT analyses have been defined; SWOT analysis A [12] and SWOT analysis B[13] which contain various criterion of different influence and area of SWOT analysis. Every criterion is connected to an area of importance of national strategy. Table V and Table VI present SWOT analyses. By the name of criterion a mark of the area of national strategy is attached, and in the separate column a mark of importance weight of criteria on regional development is entered. Influence can be positive or negative depending on where the criterion is mentioned in SWOT analysis.

Criteria \rightarrow Area of national interest	Impact
STRENGTHS	
C1- The educational structure of the population $\rightarrow A3$	MI
C2- Craftsmanship $\rightarrow A1$	MI
OPPORTUNITIES	
C3- Demand for ecological products $\rightarrow A1$	MI
C4- Projects for EU funds $\rightarrow A5$	LI
WEAKNESSES	
C5- Labor force with experience $\rightarrow A3$	SI
C6- Transport infrastructure $\rightarrow A5$	MI
C7- The synergy between the economy and research $\rightarrow A4$	SI
C8- The unemployment rate $\rightarrow A3$	LI
THREATS	
C9- Market competition $\rightarrow A2$	LI
C10- The stimulation of exports $\rightarrow A3$	LI

Both abovementioned analyses are very similar according to number and types of criteria. However, defined criteria belong to various areas of national development strategy and have different level of positive or negative influence on general evaluation of development strategy.

TABLE V: B - SWOT ANALYSIS AND CRITERION IMPACT

Criteria \rightarrow Area of national interest	Impact
STRENGTHS	
C1- Economic zones $\rightarrow A6$	MI
C2- Foreign companies $\rightarrow A1$	LI
C3- Cross-border cooperation $\rightarrow A2$	SI
OPPORTUNITIES	
C4- Geographical position $\rightarrow A5$	LI
C5- Clustering $\rightarrow A4$	MI
WEAKNESSES	
C6- Culture of innovation $\rightarrow A4$	MI
C7- Public transport $\rightarrow A6$	SI
C8- Labor productivity $\rightarrow A2$	SI
THREATS	
C9- The flexibility of the education system $\rightarrow A3$	MI
C10- Emigration of population $\rightarrow A3$	LI

V. ILLUSTRATIVE EXAMPLE

This example will present evaluation of SWOT analysis results of regional development strategies and harmonization with national development priorities. Also, the example will illustrate application of one algorithm of clustering of SWOT analysis based on the criterion and importance.

TABLE VI: SWOT CRITERIA, ITS IMPACT IN NATIONAL AREA

A. Regional SWOT Analysis

Criteria	SWOT	Impact	Area	Benefit/Cost
C1	SWOT A	MI	A3	Benefit
CI	SWOT B	MI	A6	Benefit
C 2	SWOT A	MI	A1	Benefit
02	SWOT B	LI	A1	Benefit
C3	SWOT A	MI	A1	Benefit
ĊĴ	SWOT B	SI	A2	Benefit
C4	SWOT A	LI	A5	Benefit
C4	SWOT B	LI	A5	Benefit
C5	SWOT A	SI	A3	Cost
05	SWOT B	MI	A4	Benefit
C6	SWOT A	MI	A5	Cost
	SWOT B	MI	A4	Cost
C7	SWOT A	SI	A4	Cost
C/	SWOT B	SI	A6	Cost
C8	SWOT A	LI	A3	Cost
	SWOT B	SI	A2	Cost
C9	SWOT A	LI	A2	Cost
0	SWOT B	MI	A3	Cost
C10	SWOT A	LI	A3	Cost
C10	SWOT B	LI	A3	Cost

Previous chapter shows two SWOT analyses, shortened test versions. Every SWOT analysis contains various criteria of evaluation, depending on the situation in particular region. Table VI presents criteria, their influence in specific part of SWOT analysis and importance weight depending on the area of national strategy to which a certain criterion belongs. Criteria listed in Strengths and Opportunities part of analysis represent in TOPSIS method a benefit and other criteria are considered a cost in calculation area. Term cost will be considered as negative element which reduces the value of development strategy in this particular case. Benefit will be calculated according to Eq. (3) and cost according to Eq. (4). These two values will determine the final distance of regional strategy towards an ideal solution, ideal development strategy.

B. Fuzzy - TOPSIS Evaluation

Upon determination of linguistic variables it is necessary to adjust variable to the model, which will enable the evaluation and calculation of final grade of analysis. By using previously defined fuzzy membership functions, fuzzy number, interval of activity and importance weight of criteria will be defined according to Table III, national strategy importance weight as shown in Table VII.

TABLE VII: THE IMPORTANCE WEIGHT OF EACH CRITERION GIVEN BY FUZZY MEMBERSHIP FUNCTIONS

Criteria	SWOT	Impact Fuzzy number	Area Fuzzy number (weight)
C1	SWOT A	(3.0, 5.0, 7.0)	(3.0, 5.0, 7.0)
01	SWOT B	(3.0, 5.0, 7.0)	(1.0, 2.5, 4.0)
C2	SWOT A	(3.0, 5.0, 7.0)	(6,0, 8.0, 10.0)
C2	SWOT B	(6,0, 8.0, 10.0)	(6,0, 8.0, 10.0)
	SWOT A	(3.0, 5.0, 7.0)	(6,0, 8.0, 10.0)
C3	SWOT B	(1.0, 2.5, 4.0)	(6,0, 8.0, 10.0)
~ .	SWOT A	(6,0, 8.0, 10.0)	(1.0, 2.5, 4.0)
C4	SWOT B	(6,0, 8.0, 10.0)	(1.0, 2.5, 4.0)
C5	SWOT A	(1.0, 2.5, 4.0)	(3.0, 5.0, 7.0)
00	SWOT B	(3.0, 5.0, 7.0)	(3.0, 5.0, 7.0)
<u>C(</u>	SWOT A	(3.0, 5.0, 7.0)	(1.0, 2.5, 4.0)
Co	SWOT B	(3.0, 5.0, 7.0)	(3.0, 5.0, 7.0)
07	SWOT A	(1.0, 2.5, 4.0)	(3.0, 5.0, 7.0)
C 7	SWOT B	(1.0, 2.5, 4.0)	(1.0, 2.5, 4.0)
C8	SWOT A	(6,0, 8.0, 10.0)	(3.0, 5.0, 7.0)
	SWOT B	(1.0, 2.5, 4.0)	(6,0, 8.0, 10.0)
C9	SWOT A	(6,0, 8.0, 10.0)	(6,0, 8.0, 10.0)
C9	SWOT B	(3.0, 5.0, 7.0)	(3.0, 5.0, 7.0)
C10	SWOT A	(6,0, 8.0, 10.0)	(3.0, 5.0, 7.0)
C10	SWOT B	(1.0, 2.5, 4.0)	(3.0, 5.0, 7.0)

Out of deteriorated fuzzy values, a decision matrix has been defined that has to be normalized and included in the importance weights of particular areas of national strategy to which a certain criteria corresponds to. Before the calculation of quality of development strategy it is necessary to normalize decision matrix and include importance weight.

The normalized decision matrix can be calculated by applying Eq. (3) or Eq. (4) depending on whether the criterion in SWOT analysis is a benefit or a cost, as shown in Table IX.

After decision matrix normalization, the next step is to calculate the weighted fuzzy decision matrix. Upon normalization the next step is approached and that is calculation of closeness coefficients. The closeness coefficients for each regional development strategy are calculated by applying Eq. (10) as shown in Table IX.

When we look at the original data of both SWOT analyses it is possible to conclude that they are quite similar and relatively equal. In this case, user would have difficulties to determine which strategy is better. Obtained data show that SWOT *B* analysis of regional strategy is better and closer to development guidelines of national strategy. The reason for that result can be found in low values, which with the stress put on importance give an advantage to SWOT *B* analysis.

TABLE VIII: NORMALIZED AGGREGATION FUZZY DECISION MATRIX

Criteria	SWOT	Impact Fuzzy number	Benefit/Cost
C1	SWOT A	(0.4, 0.7, 1.0)	Benefit
CI	SWOT B	(0.4, 0.7, 1.0)	Benefit
C2	SWOT A	(0.4, 0.7, 1.0)	Benefit
C2	SWOT B	(0.6, 0.8, 1.0)	Benefit
C3	SWOT A	(0.43, 0.7, 1.0)	Benefit
CS	SWOT B	(0.25, 0.63, 1.0)	Benefit
C4	SWOT A	(0,6, 0.8, 1.0)	Benefit
C4	SWOT B	(0.6, 0.8, 1.0)	Benefit
05	SWOT A	(1.0, 0.4, 0.25)	Cost
G	SWOT B	(0.43, 0.7, 1.0)	Benefit
C(SWOT A	(1.0, 0.6, 0.43)	Cost
Co	SWOT B	(1,0, 0.6, 0.43)	Cost
	SWOT A	(1.0, 0.4, 0.25)	Cost
C/	SWOT B	(1.0, 0.4, 0.25)	Cost
C 9	SWOT A	(1,0, 0.75, 0.6)	Cost
68	SWOT B	(1,0, 0.4, 0.25)	Cost
С9	SWOT A	(1,0, 0.75, 0.6)	Cost
	SWOT B	(1.0, 0.6, 0.43)	Cost
C10	SWOT A	(1,0, 0.75, 0.6)	Cost
C10	SWOT B	(1,0, 0.4, 0.25)	Cost

TABLE IX: FUZZY TOPSIS RESULT

SWOT	d_{j}^{+}	d_j	CC_i	Rating
SWOT A	31,073	40,231	0,56421	2
SWOT B	28,019	36,931	0,56861	1

C. K-Means Clustering

Clustering belongs to the area of data analysis and machine learning domain. Many methods are used for data organization in clusters according to their similarities. The clustering process is usually based on measuring similarities of attributes in data [14].

K-Means algorithm is one of the popular unsupervised learning algorithms, relatively easy for implementation. The basic idea is to define k centroids, one for each cluster. Controids represent the points of gravitation around which the elements are grouped according to their similarities. Usually there are multi-dimensional data like in the SWOT analyses cases. Algorithm calculates the distance between individual elements from the set centroids, while algorithm corrects the position of centroids in every iteration of algorithm repetition. The idea with this algorithm is not to overlap the clusters.

The algorithm calculates the distance between the points by the means of Euclid's distance. It uses the function that defines minimal sum of the mean square errors on all K clusters [15]. The mean square error can be calculated as:

$$J(C_k) = \sum_{x_i \in C_k} \|x_i - \mu_k\|^2$$
(11)

where x_i is data point, μ_k is cluster center,

The goal of k-means is to minimize the sum of the squared error over all K clusters [9],

$$J(C) = \sum_{k=1}^{K} \sum_{x_i \in C_k} \|x_i - \mu_k\|^2$$
(12)

Croatia is currently divided into 22 regions. Besides the analysis of harmonization of regional strategies with the national, it is also very important to discover their similarities. Every region possesses certain specificities and special requirements and that can cause the situation where a certain regional strategy isn't correspondent to a national strategy. Before clustering process it is necessary to adjust linguistic variables and fuzzy values in decision matrix to crisp values for every particular criteria in SWOT analysis.

There exist several available methods, in this paper we use the expected value [D. Dubois, H. Prade, 1987; S. Heilpern, 1992] calculated as [16]:

$$EV(A) = \frac{a+2b+c}{4} \tag{12}$$

where *T* is fuzzy number triplet A=(a, b, c).

The example presents the clustering of 22 different regional SWOT analyses. Analysed data will be grouped in three (K=3) clusters according to their similarities.

The fuzzy number transformation and expected value for previous SWOT analysis is calculated by applying Eq. (12) as shown in Table X.

For the purposes of clustering calculation and analysis WEKA¹ and MatLab machine learning software virtual tool have been used. The following results have been obtained by classification and have been presented in Table XI.

TABLE X: DECISION MATRIX WITH TRANSFORMED FUZZY VALUES IN TO CRISP VALUES

Criteria	SWOT A EV	SWOT B EV
C1	27	14
C2	42	66
C3	42	21,5
C4	21,5	46,5
C5	14	27
C6	14	27
C7	14	7,5
C8	42	21,5
C9	66	27
C10	42	14

TABLE XI: RESULTS OF 22 SWOT ANALYSIS CLASSIFICATION

Cluster centroids	Clustered Instances	
Attribute Full Data (22)		
Cluster 1 (3)	Cluster 1 3 (14%)	
Cluster 2 (4)	Cluster 2 4 (18%)	
Cluster 3 (15)	Cluster 3 15 (68%)	

Results indicate that majority of the regional strategies are grouped in third cluster.

Fig. 3 presents classification of SWOT analyses in clusters

on test data according to chosen criteria. We can notice relatively good distribution of development strategies. Obtained clusters are relatively "clear". In our example, SWOT *A* analysis has been put in cluster 1, while SWOT *B* has been put in cluster 2.

These results have confirmed previously mentioned results that the two mentioned development strategies significantly differ. Not just according to the quality, but also according to national development strategies and their development character.



Fig. 3. K-means clustered results.

VI. CONCLUSION

This paper has showed that fuzzy TOPSIS method is an effective tool for determination of quality of local/regional SWOT analyses and their harmonization with national priorities. By using the method in this paper we have obtained closeness coefficients, which have to be in the range between 0 and 1 for every SWOT analysis. Accordingly, SWOT analysis *B* has had higher closeness coefficient which means that the mentioned SWOT analysis is better and closer to development guidelines of national strategy. The reason for that result could be found in importance weights which give advantage to SWOT *B* analysis compared to SWOT *A* analysis.

The other method of clustering produced results which have proved the results of fuzzy TOPSIS method with which has been confirmed that SWOT analysis A and SWOT analysis B differ according to quality, harmonization with national development strategy and according to development character. That way, the clustering method has shown that SWOT analysis A has been put in first cluster while SWOT analysis B has been put in third cluster.

This approach can be used to evaluate any areas of development strategies where linguistic variables can be set as well as other fields that can be compared with higher areas of importance.

As Croatian regional development strategies are made until the end of 2013 and new ones are in the making process, it would be interesting to include given methods to evaluate them before they are finished. This way they could be harmonized with national strategy.

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Brand Credibility to Mitigate Brand Boycott Preventive Strategy of Brand Globalness and Brand Endorsement: Theoretical Perspective

Hesham Fazel

Abstract—Boycott effectiveness is highly reliant upon consumer willingness to engage or disengage in the boycott activities. Little research investigates possible strategies that can be applied to positively influence individuals' perspectives about the boycotted brands and perhaps increase their willingness to disengage in boycott activities. This paper theoretically discusses a main relationship between brand credibility and willingness to dis/engagement in brand boycott movements. I propose that when consumers perceive a brand at higher level of credibility, they are less inclined to engage in boycott activities against that brand. Furthermore, this paper discusses the idea that brand endorsement of local events and consumers' perception of brand globalness may moderate the relationship between brand credibility and consumer willingness to dis/engage in boycotts.

Index Terms-Brand, boycott, globalness, endorsement.

I. INTRODUCTION

In 2005, the Danish newspaper Jyllands-Posten published 12 cartoons that depicted the Muslim Prophet Muhammad in a way that was considered offensive to Muslims and which represented an extreme violation of Muslim values and principles. In Denmark's Muslim community and in Muslim countries around the world, this egregious act triggered widespread consumer boycotts against a variety of Danish brands that had nothing to do with the publication except for the fact that they shared its Danish origin. For example, the government of Iran issued boycotts and restrictions on all consumer products imported from Denmark. Many Muslims and their supporters took part in the protests that ensued throughout the global community, actively participating in one of the single biggest boycotts of all time [1].

A boycott represents the collective power of consumers and serves as a mechanism for their social control of business. Boycotters intentionally use their "purchase votes" to favour (or disfavour) firms that make (or do not make) positive societal impacts. Boycotting is a collective act: similar to voting; it is a pro-social behaviour in which any form of individual benefit appears to be limited; nonetheless, people flock to join the censuses in large numbers [2]. A reduction in sales has occurred in some boycotts as a result of strikes or other actions by boycott organizers that hindered product distribution [3], boycotts are undesirable perceptions for marketers and managers, who must therefore do everything in their power to develop and implement all possible tactics that will prevent or reduce the loss in market-share that can result from such social actions by consumers.

For the most part, prior research studies on consumer boycotts have been conceptual or descriptive, with a focus on boycott organizers and targets as well as consumer motivations for participating in boycott activities [4]. No previous studies have investigated beyond the common relationship between firms and boycotters' participation motivation. Little research has investigated the strategies that brands may apply protect their firm's image and investments and fight back against boycotters.

Research Question

In the present research, I examine the role of brand credibility in terms of its effect on consumers' willingness to engage or disengage in brand boycotts in response to an offensive action. I discuss the boycotted brands that have been indirectly involved in an egregious action that triggered a boycott (e.g., Arla Foods). Credibility has been noted as a factor that plays a key role in customer perceptions of the retail environment, particularly in the context of pricing tactics, advertising, salesperson interactions and purchase intention [5]. As mentioned, I investigate the impact of brand credibility on consumers' willingness to engage in boycott activities against certain brands. Further, I examine brand globalness and brand endorsement (e.g., local event sponsorship) as two key factors that might explain the relationship between brand credibility and boycott dis/engagement.

This research does not aim to capture the complexity of an individual's motivation to participate in a boycott; rather it aims to capture individuals' perception of brand credibility, brand globalness and brand endorsement and how such perceptions can affect willingness to dis/engage in boycotting activities. Understanding the factors that might diffuse boycotts should help brands to develop certain tactics for building a level of international brand acceptability that can de-construct potential boycotts. In the next section, I will develop the research theoretical background of boycotts; discuss chronological origins and successes, and link to the literature on brand credibility and brand endorsement. I thoroughly identify the research propositions, propose methods to test the research.

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II. LITERATURE BACKGROUND

Consumer boycotts have been defined as "an attempt by one or more parties to achieve certain objectives by urging individual consumers to refrain from making selected purchases in the marketplace" [6] The "urging" and organization of a boycott typically come from a pressure group or non-governmental organization. Boycotts are thus, a division of a more general category of consumer behavior where social and ethical issues have an impact on purchase decisions [7]. Boycotts strike to convey objections to political, religious, economic or financial events. Mostly, boycotts arise to condemn political implications, however, organizing boycott activities to reach religious objectives are scarce and it is harder to deal with. Historically, the boycotts have contributed to some impressive successes and allow relatively defenceless groups to emphasize their rights [8]. Colonists' boycott of British goods led to the elimination of the Stamp Act by the British government in 1766 [9] whereas the boycotts were the main factor in the trade union movement in the United States in the early twentieth century Gandhi organized boycotts of British salt and cloth as part of a strategy for non-violent direct action, which ultimately led to the independence of India in 1947 European consumers' boycotts against Shell over its plan to dump the Brent spar oil platform at sea; the U.S. boycott of Texaco over alleged racial remarks by senior management; and the U.S. boycott of Mitsubishi over alleged sexual harassment in the workplace [10].

Boycotts usually are triggered for tow main purposes: instrumental and expressive boycotts [8]. An instrumental boycott intends to force the target to change a disputed procedure or policy. Consumers in this case force firms to change their prices or balance current prices with complimentary services that might help consumers accept and justify current prices. Expressive boycotts, however, are more generalized form of protest that communicates consumers' displeasure with the actions of the target. Typically, this form of protest is characterized by a fuzzy statement of goals and may simply vent the frustrations of the protesting group [9]. At the level of the individual consumer, boycotts may be driven by a variety of motives, some expressive and some instrumental. A consumer might be angry at a firm and also hope to change its practices or provide further action to explain the case like in the case of Danish products boycotts in Middle East. Also one possible motivation, consumers may boycott such products to avoid feeling guilty for not fulfilling cultural or communities' values through a support response. For example [9] found that consumer anger was unrelated to consumers' judgments of product quality. They reached that consumers in Nanjing, China, anger toward Japan predicted product ownership, but not product judgments. In other words, Chinese consumers refused to purchase Japanese products, but did not denigrate the quality of these goods [10].

All these boycotts represent influential votes in the consumer marketplace, thus increasing the pressure on brands to carefully consider their strategies to land them on solid ground of reputation and acceptability in marketplace. This can be achieved through providing a mechanism to disseminate superior brand credibility and build strong brand image and presence in the market through implementing brand endorsement and brand globalness [10].

A. Perceived Brand Credibility

With the globalization of markets, firms are expanding the geographic scope of their operations, acquiring companies in other countries, and entering into relationship across national boundaries. As a result, firms need to pay close attention to organizing and integrating marketing strategy across marketplaces. An important component of a firm overall marketing strategy is its branding plan. Strong brands facilitate firms to establish identification in the marketplace and develop solid customer agreement [11]. Building a strong brand image is the objective of various organizations because of the multitude of possible benefits that may gain. To appreciate better how to build brand equity, many models of brand building have been put forward [12]. For the majority of customers in most situations the meaning or image of the brand plays a major role in their lives [13]. What the brand is regarded as in and how the brand should stand for in the minds of customers enhance brand image and simply creates brand meaning [14].

Brand image is the perception of the product or the brand by the consumer. Psychologically, the brand image is a symbolic construct created within the minds of people and consists of all the information and expectations associated with a product or service. It is like building a personal relationship with costumers. Building a strong relationship between the brand and people drives people to stay away from such activities that might harm their brands. One of the strategies that intensify brand image and lead to strong relationship with the firm in general is establishing brand credibility [14]. Firms must establish from day one a high credibility perception among their consumers and build brand credibility that would help firms boosts the perception of evaluating brand image [15].

Brand credibility can be regarded as a psychological tool to satisfy consumers. It is a strategy that firms must establish in order to survive in competitive market and aggressive consumers with unpredictable emotions. Brand credibility means that the brand is perceived as credible in terms of three: expertise (e.g., being competent and innovative and being a market leader), trustworthiness (e.g., being dependable and keeping customer interests in mind), and likability (e.g., being fun, interesting, and worth spending time with). How to keep this within the minds of people all over the world is the management decisionmaking [15], [16] state that results from samples of retail bank and long distance telephone company customers indicate that brand credibility serves in a protective role: it significantly enhances word-of-mouth and reduces switching behaviours among customers.

Credibility is mostly characterized as the believability of an entity's intentions at a particular time. Therefore, brand credibility is defined as the believability of the product information contained in a brand, which requires as stated before that consumers perceive the brand to have the ability (i.e., expertise), willingness (i.e., trustworthiness) and responsiveness (i.e., likeability) [17]. Accordingly, companies can continuously deliver what has been promised. Brands can function as signals when they do not deliver what is promised, their brand equity perception will decrease. Consumers feel more satisfy when their expectations are met [18]. Brands are concerned about how their image can reach consumers properly and affectively. Also, how to keep the good image of the brand alive as many years as possible and not get affected by a negative act from a third party. For example, in the case of a boycott against Danish companies, Arla Foods failed to build proper brand credibility as they market their brand without keeping local customers' interests and values in mind. Simply they failed to establish the necessary close relationship with Middle Eastern consumers to value their existence in the marketplace. Thus, brands with higher level of credibility will enhance consumers' believability on brands and firms. When companies continue to fulfilling consumers' needs in a trustable manner and satisfying approaches, consumers are less likely to engage in any acts that may damage the brands images and investments. Increasing positive brand credibility, then, may perhaps help firms to properly defuse boycotts.

P1: Consumers with high (vs. low) perception of brand credibility are less likely to engage in boycott activities against targeted brands.

B. Perceived Brand Globalness

The American Marketing Association defines a brand as "a name, term, sign, symbol, or design, or combination of them, intended to identify the goods or services of one seller or group of sellers and to differentiate them from those competitors." So a brand is a product or service that provides an additional dimension and provides differentiation from other products or services designed to meet the same needs, and perhaps the most unique skill of professional marketers is the ability to create, maintain, and enhance brand, so the brand identifies the seller or manufacturer [19].

Brands can be the name, trademarks, logos or other symbols. [20] Said in a speech that at the time of a marketer creating a new name, symbol logo for a product, then at that moment they are creating a brand. A brand is simply a part of a marketing process in selling a product. [21] says, "The brand becomes a very important issue for a strategy of marketing a product". Brand accordance with the meaning and function must be able to show you something, had a particular meaning. Brand's success today is determined by the relationship knowledge building with products or services provided. Brand is a promise made by a company to its consumers and is supported by the same company. Brands represent the foundation or basis of brand extension. A brand is part of a product, communication strategy implemented in advance disseminate widely information about the brand and establish brand image [21].

The definition of a global brand is a market with a worldwide, maintaining the core essence across the world, although at the time of execution on execution more or less marketing must adapt to the needs of local marketing. Some experts claim that there are indications that the perceived brand globalness can create the perception of the brand superiority and perceptions of brand prestige. Other experts, underlines the fact remains that global brands can also create a connotation multicultural, sophistication and modernism. Using a global brand can generate economies of scale and scope that is research and development, manufacturing, purchasing, inventories, logistics, marketing ideas, and speed to market. Furthermore, the infrastructure needed to develop the existing global brands such as markets, media, events and agencies. To get the scale and scope economies, and to influence this infrastructure, which must be done is the global standardization and consistency, through a global branding. If a company treats only as a name brand, the company would not see the actual brand objectives [19], [22].

Apparently globalness brand have a significant influence on perceived brand quality and trustworthiness which are considered vital parts of evaluating brand credibility [22]. Therefore we argue that perceiving brand globalness may play a significant role in moderating the relationship between brand credibility and the willingness to dis/engage in boycotts. Formally stated

P2: In the event of high (vs. low) brand credibility perception; consumers with high (vs. low) perception of brand globalness are less likely to engage in boycotts activities.

C. Brand Endorsement

Using celebrities to promote a product is a common method in advertising around the globe. [23] study focus was on consumers' dissimilar and similar responses to celebrities' endorsement in advertising across culture. Two dimensions were performed to analyze the differences and similarities in celebrity endorsement in advertising acrossculture; low versus high context, means the extent in which viewers communicate or would prefer to communicate with messages. In high context communication cultures like Japan and Korea consumers in favour of indirect or embedded ways of communication via symbols, therefore celebrity do their commercial and deliver massages covertly. Individualists see celebrity as unique and successful individual in his/her field, thus explicit communication is a common functional technique in advertising, whereas collectivists perceive celebrity as national symbolic or group representational figure. Celebrities in collectivistic cultures are perceived as trustworthy which is consistent with the abstract value of the culture. Execution advertisement is different across culture due to the necessity of taking culture values and principles into consideration when lunching advertisement campaign, massages must be congruently follow culture value and principles in order to be accepted [23]. For that reason authors examine the technique divergent, the styles and features that are executed in such advertisement in both cultures. Noteworthy finding was raised up when the study determined that celebrity in Korea promote more than one product. Thus, exposing to different products with the same celebrity endorser might lead to decrease products differences. In addition to that the product effectiveness is questionable and trustworthiness and believing in the celebrity endorser might be declined [24].

Brand endorsement helps brands to build a reliable corporate image, enhances visibility and increases globalness [25]. Brand endorsement is instant strategies, that firms can utilize to influence and shift the opinion of consumers to their benefits. One of the most dynamic types of endorsement that may affect consumer evaluation is corporate sponsorship of events, for example, the World cap; sports championship or perhaps social campaign such as (helps the needy, child poverty) and so on. Here, the position of the brand is being an endorser of an event, or some component thereof.

It has been theorized that the ability of event sponsorship to change consumer attitudes/beliefs and benefit the company is drawn from two sources [26]. Balance theory [27] hypothesizes a three angels of relationship represents three elements the endorser, the object of the endorsement, and the consumer. The theory specifies that people desire the relations among the elements to be balanced, and that people may alter their attitudes in order to achieve consistency among the elements. An example giving by [28], a belief is out of balance and unstable if a lowly valued object is linked with a highly valued object. The brand hopes that the consumer would have a positive evaluation toward the sponsored event, and that in the presence of the brand's expressed positive response toward the event, the consumer, therefore, would form a positive response toward the brand.

Through sponsoring regional or local events such as sponsoring cultural (e.g., Islamic) festivals where the brand is placed on the festival webpage, flyers, posters, bags, banners and so on, may create a good opportunity for the brand to increase consumers' brand awareness to brand's target market, which indeed boosts consumers' perception of brand's globalness. For example, Arla food brand can endorse their trademarks by sponsoring important events such as providing breakfast in Ramadan for fasting people, or run a campaign enlightening the biography of Prophet Mohammed or the legacy of Islam in the target region. Sponsoring such events should help the brand to increase its credibility level and involvement in the region and gain consumers' respect, trust and value its business in the marketplace. Consequently, consumers will be less likely to get involved in boycotts against these brands due to the robust and mutual relationship they have made with firms and costumers.

P3: In the event of high (vs. low) brand credibility perception; brand that endorses (vs. no) a local event moderate consumers' perception level of brand globalness.

Fig. 1 illustrates the research framework, it shows the perceived brand credibility as an independent variable that has a direct influential role to drive consumers' willingness to either engage or disengage in boycott activities against a targeted brand. The figure also shows the moderation paths of perceived brand globlaness and brand endorsement.



Fig. 1. Proposed theoretical framework

III. GENERAL DISCUSSION

Ref. [29] pointed out that web-based surveys have great potential for the inclusion of multimedia functions that may be useful in soliciting opinions on a variety of topics. The web-based surveys minimize the costs of both data collection and analysis; this benefit is increasing its usage in research. When collecting data from a large sample, it's time effective and cost effective via the web and results can be available much quicker than traditional survey techniques. A web-based survey, using a sample drawn from a population of Middle Eastern consumers of global brands, will be conducted [30].

Studies should to be conducted to test the research's propositions. Boycotted products must be identified and selected keeping in view that these products should be accessible and affordable to all social classes and also used by all ages and education levels. For instance; Milk and Milk derivatives (e.g., DANO, Arla, Puck); Drinks (e.g, Sun-top); Toys (e.g., LEGO) Shampoo (e.g., HAZA). Brand labels should be used, excluding any images. The scale is developed based upon recent literature. Brand credibility is measured using three dimensions: trustworthiness, expertise and attractiveness or (likability). Brand credibility measurement scale is adopted from Wang and Yang studies about brand credibility, the level of willingness to dis/engage in a boycott will be measured using straight question that indicates the willingness to engage in a boycott. An adopted and modified version of should be used to measure perceived brand globalness [31].

The research goal is to investigate a high-profile socialissue boycott. The boycott target has been widely condemned and has received extensive negative coverage in national print and broadcast media. People are well aware of the issue leading to the boycott and overwhelmingly disapproved of the company's actions [32], [33]. It is a situation that all marketers prefer to avoid. In this research I propose several strategies that should give us overall thoughts on how people may disengage in boycott activities. First, perceived brand credibility of is suggested as a powerful predictor of mitigating boycott activities. The more consumers perceived the brand credibility, the more likely consumers would disengage in boycott activities.

Second, the internationality perception of a brand may not constrain its consumptions among consumers, which may drive consumers to be less willing to engage in boycotting such brands. Third, I suggest that perceive brand endorsement, through sponsoring local event, which may promote cultural values, might qualify previous relationship.

This paper is to theoretically discuss brand credibility; brand globlness and brand endorsement as factors that might affect the level of willingness of boycotters' to dis/engage in boycotts activities. Understanding how consumer think in terms of getting involved in such activities will help mangers to know how protect and immunize their investment from possible risks and damages. I expect to find legitimate results presenting main effect of the consumer perception of brand credibility on boycott willingness to dis/engage in boycott activities, and moderation effects of brand endorsement and brand globlness perception that will qualify previous relationship. Other factors that might help brands build strong strategies
to protect their image and credibility from different type of risks, for instance, cultural values and norms embeddedness in advertisements and type of persuasion can be promising research path. Also the role of perceiving brand prestige as a new moderator might be a suitable venue for future research.

In sum, the use of product boycotts by consumers is one of the more enduring actions that have been expected and used to show objections to the action done by certain companies or other agents from the country of these companies. These actions have become particularly popular because they involve heavy hand of government intervention; lengthy legal action or continuous preventing actions from targeted companies to defuse boycott activities.

I undertake a theoretical exploration into this problem and come up with some investigative propositions. Boycotting products because they from the same country of a violator agent can be prevented through some actions that must be taken from these companies. First, companies, particularly, multinational enterprises should increase their brand credibility in order to sustain lengthy life in different cultures. Second, companies or multinational enterprises can reach high brand credibility through increasing consumers' awareness of their brands. In other words, when brands become global brands, consumers may think twice before boycotting such brands. Third, to reach brand globalness, companies must involve in the societies" local events. Such involvements may increase the brand the perception of brand globalness, thus, drive people to less engage in boycott activities.

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Modeling Gold Price via Artificial Neural Network

Hossein Mombeini and Abdolreza Yazdani-Chamzini

Abstract—Developing a precise and accurate model of gold price is critical to manage assets because of its unique features. In this paper, artificial neural network (ANN) model have been used for modeling the gold price, and compared with the traditional statistical model of ARIMA (autoregressive integrated moving average). The three performance measures, the coefficient of determination (R2), root mean squared error (RMSE), mean absolute error (MAE), are utilized to evaluate the performances of different models developed. The results show that the ANN model outperforms ARIMA model, in terms of different performance criteria during the training and validation phases.

Index Terms—ANN, gold price, forecasting, ARIMA.

I. INTRODUCTION

Gold price plays a significant role in economical and monetary systems. The price of gold and other assets are often closely correlated [1]. For example, the link between gold and equities is usually negative, as investors typically transfer money from gold into the safe haven of equities during times of boom and vice versa during times of crisis. Whereas, the link between gold and oil is typically positive and a tension can lift both the price of oil and gold.

Accurate forecasting of gold price helps to foresee the circumstances of trends in the future. This provides the useful information for stakeholder to fulfill the essential actions in order to prevent or mitigate risks, which may lead to financial losses or even bankruptcy.

Traditional mathematical models such as Autoregressive Integrated Moving Average [2], jump and dip diffusion [3], and the multi linear regression [4]-[7] models have been used for gold price forecasting. As well as, artificial intelligence models such as artificial neural networks (ANN) have been developed as a non-linear tool for gold price forecasting [2], [5], [8].

These studies document the need for a better management of gold selling and investing to reduce risk value. An accurate gold price forecasting model is needed to show the trend of price changes in the futures to carry out appropriate exchanges. Furthermore, it is very difficult to earn a powerful function using traditional mathematical model [5], and these models are principally based on some strong assumptions and prior knowledge of input data statistical distributions.

The main aim of this paper is to analyze the capability of an ANN in modeling gold price changes and to evaluate its

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performance in comparison with other traditional time series modeling techniques such as ARIMA. Finally, the best fit model is identified according to the performance criteria including coefficient of determination (R^2), mean absolute error (MAE), and root mean square error (RMSE).

The rest of the paper is organized as follows: Section II summarizes artificial neural networks. Section III describes the ARIMA model, including the determination of the orders of ARMA model. Section IV presents the gold price modeling by ANN and ARIMA models. Section V analyzes the performance of the models, including its comparison with other and discusses several practical issues involved in its deployment. Sensitivity analysis is presented in Section VI presents. Finally, the conclusions of the present study are discussed in Section VII.

II. ARTIFICIAL NEURAL NETWORKS (ANN)

ANN technique has emerged as a powerful modeling tool which can be applied for many scientific and/or engineering applications, such as: pattern reorganization, classification, data processing, and process control. ANN technique has some unique futures which distinguish them from other data processing systems include ability to work successfully even when they are party damaged, parallel processing, ability to make generalization, and little susceptibility to errors in data sets [9]. An artificial neural network simulates the human brain mechanism to implement computing behavior [10].

ANN is developed based on biological neural networks, which neurons are the basic building blocks ones. An artificial neuron is a model of a biological neuron. An artificial neuron receives signals from other neurons, gathers these signals, and when fired, transmits a signal to all connected neurons [11]. An artificial neuron model is depicted in Fig. 1.

As seen in Fig. 1, x_i (*i*= 1, 2, ..., *n*) is the input signal of *n* other neurons to a neuron *j*; is the connection weight between the i_{th} neuron and the neuron *j*; is the activation threshold of the neuron *j*; *f* is the transfer function, and y_j is the output of the neuron. y_j is calculated through Eq. (1):

$$y_i = f\left(\sum_{i=1}^n w_{ij} x_i - \theta_j\right) \tag{1}$$

f is generally linear, step, threshold, logarithmic sigmoid (logsig), hyperbolic tangent sigmoid (tansig) functions.



Fig. 1. Artificial neuron model.

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A neural network contains of three layers, including one input layer, several middle layers (hidden layers) and one output layer. It should be noted that there is no theoretical limit on the number of hidden layers but typically there is just one or two [12]. Fig. 2 depicts an artificial neural network architecture employed in this study.



Fig. 2. A typical artificial neural network architecture.

In this study a multi-layer feed-forward perceptron (MLP) with a back propagation learning algorithm is employed to model gold price. During the modeling stage, coefficients are adjusted through comparing the model outputs with actual outputs. A five-step procedure can be described to present the learning process of an ANN as follows:

- Input–output vectors are randomly selected as training datasets,
- The structure of network is formed,
- Network outputs are computed for the selected inputs,
- Connection weights are adjusted according to performance measure,
- The process of adjusting the weights is continued until performance measures are satisfied.

III. ARIMA METHOD

Box and Jenkins developed a general forecasting methodology for time series generated by a stationary autoregressive moving-average process [13]. In an autoregressive integrated moving average (ARIMA) model, the future value of a variable is assumed to be a linear function of several past observations and random errors. The term integrated indicates the fact that the model is produced by repeated integrating or summing of the ARMA process [14]. The ARIMA model is employed for applications to nonstationary time series that become stationary after their differencing. The general form of the ARIMA model is given by:

$$\varphi(B)x(t) = \phi(B)(1-B)^d x(t)$$
(2)

The structure of ARIMA model is known as ARIMA (p, q, d), where p stands for the number of autoregressive parameters, q is the number of moving-average parameters, and d is the number of differencing passes.

The Box and Jenkins methodology for building time series models includes four phases [13]: 1) model identification, 2) model estimation, 3) model validation, and 4) model forecasting. These phases are described in details by Palit and Popovic [14]. In order to determine the order of the ARIMA best model, the autocorrelation function (ACF) and the partial ACF (PACF) of the sample data are employed. In this study, selection technique in conjunction with ACF and PACF for estimating the orders of ARMA model is the Akaike information criterion (AIC). This involves choosing the most suitable lags for the AR and MA components, likewise assigning if the variable requires differencing to convert into a stationary time series.

IV. MODELING OF GOLD PRICE

The information used in this study includes 220 monthly observations of the gold price per ounce against its affecting parameters from April 1990 to July 2008. The gold price changes during this period are depicted in Fig. 3. In order to develop ANN and ARIMA models for the gold price, the available data set, which consists of 220 input vectors and their corresponding output vectors from the historical data of gold price, was separated into training and test sets as depicted in Fig. 4. For achieving the aim, 200 observations (from April 1990 to November 2006) are first applied to formulate the model and the last 20 observations (from December 2006 to July 2008) are used to reflect the performance of the different constructed models. Based on the ARIMA model, the past observations of gold price are used in order to formulate the model, and in order to develop ANN model, the affecting parameters on gold price are extracted as described in the following part.



Fig. 3. Gold price changes (data resource: www.kitco.com).

One of the most important steps in developing a successful forecasting model is the selection of the input variables, which determines the architecture of the model. Based on the 'hunches of experts', seven input parameters for the gold price forecasting were identified: USD Index (measures the performance of the United States Dollar against the Canadian Dollar), inflation rate (the United States inflation rates), oil price (West Texas Intermediate Crude Oil Prices), interest rate (the United States interest rates), stock market index (Dow Jones Industrial Average), silver price, and world gold production. The data used in this study were downloaded from several sources from the addresses as presented in Table I. As shown in Table I, expect of world gold production, other parameters are monthly. According to the importance of production on the gold price changes, the authors employed the method of Cubic Spline interpolation (see [15]), which is a useful technique to interpolate between known data points due to its stable and smooth characteristics, in order to convert annually data into monthly data. The above mentioned models are established as described in the next section.

ARIMA modal. Using the Eviews package software, the best-fitted model is obtained based on the optimum solution of the parameters (the values of p, d, q) and the residuals (white noise). The best-fitted model is ARIMA (1, 1, 0) as follows:

$$\hat{y}_t = -1.873 + 1.008 y_{t-1}$$
 (3)

ANN model. According to the concepts of ANNs design and using productive algorithm in MATLAB 7.11 package software in order to obtain the optimum network architecture; several network architectures are established to compare the ANNs performance. Before constructing the ANN model, all variables were normalized to the interval of 0 and 1 to provide standardization using Eq. (4):

$$X_{norm} = (X - X_{\min}) / (X_{\max} - X_{\min})$$
(4)

The best fitted network based on the best forecasting accuracy with the test data is contained of seven inputs, twenty four hidden and one output neurons (in abbreviated form, $N^{(7-24-1)}$). This confirms that simple network structure that has a small number of hidden nodes often works well in out-of-sample forecasting [16]-[20]. This can be due to the over fitting problem in neural network modeling process that allows the established network to fit the training data well, but poor generalization may happen.

Variable	Type of data	Maximum	Minimum	Unit	Symbol	Resource
Gold price	Monthly	1134.72	256.675	\$/ounce	G	www.kitco.com
Silver price	Monthly	18.765	3.64	\$/ounce	S	www.kitco.com
USD index	Monthly	1.599	0.967	-	С	research.stlouisfed.org
Oil price	Monthly	133.93	11.28	\$/barrel	0	www.economagic.com
Inflation rate	Monthly	0.0628	-0.0209	-	Inf	www.inflationdata.com www.rateinflation.com
Interest rate	Monthly	8.89	2.42	-	Int	www.econstats.com
stock market index	Monthly	13930	2442.33	\$	DJ	finance.yahoo.com www.google.com
World gold production	Annually	216.95	178.195	Ton	Pg	minerals.usgs.gov

V. PERFORMANCE ASSESSMENT OF THE MODELS

In order to generalize the model to unknown outputs, its performance must be tested by comparing outputs estimated by the each model with real outputs. In this paper, the performance of the each model is evaluated by three performance measures: Coefficient of determination (R^2) , Mean Absolute Error (MAE), and Root Mean Square Error (RMSE). These measures are calculated by following relations:

$$R^{2} = 1 - \frac{\sum_{i=1}^{N} (A_{i} - P_{i})^{2}}{\sum_{i=1}^{N} (A_{i} - \overline{A}_{i})^{2}}$$
(5)

$$RMSE = \sqrt{\frac{\sum_{i=1}^{N} (A_i - P_i)^2}{N}}$$
(6)

$$MAE = \frac{\sum_{i=1}^{N} |A_i - P_i|}{N} \tag{7}$$

where P_i is predicted values, A_i is observed values, $\overline{A_i}$ is the average of observed set, and N is the number of datasets.

 R^2 shows how much of the variability in dependent variable can be explained by independent variable(s). R^2 is a positive number that can only take values between zero and one. A value for R^2 close to one shows a good fit of forecasting model and a value close to zero presents a poor fit.

MAE would reflect if the results suffer from a bias between the actual and modeled datasets [21]. RMSE is a used measure in order to calculate the differences between values predicted by a model and the values observed from the thing being modeled. RMSE and MAE are non-negative numbers that for an ideal model can be zero and have no upper bound.

The comparative analysis of testing period performance of the ANN and ARIMA techniques using three global statistical criteria (root mean square error, mean absolute error, and coefficient of determination) has been accomplished and is shown in Table II. According to the table, for ANN and ARIMA models, the RMSE values are 118.04 and 166.87, and the MAE values are 0.102 and 0.144, and R^2 values are 0.967 and 0.841, respectively.

For all statistical criteria, the ANN model is better than the ARIMA model, i.e. based on all statistical criteria, the ANN model outperforms the ARIMA model. The results of the study indicate that the forecasting capability of the ARIMA model is poor in comparison with the ANN model in gold price forecasting.

The forecasted value of each model for both validation and training data are plotted in Fig. 4. In addition, the forecasted value of ARIMA and ANN models for test data are plotted in Fig. 5.

TABLE II: FORECASTING PERFORMANCE INDICES OF MODELS FOR GOLD
PRICE



Fig. 4. Actual and forecasted values during training and validation by ARMA and ANN for gold price.



Fig. 5. The variation of the values predicted by ARIMA and ANN models during validation period, from the actual values.

VI. SENSITIVITY ANALYSIS

Sensitivity analysis is a useful tool in order to determine the relationship between the related parameters. In this paper to identify the most sensitive factors affecting gold price cosine amplitude method (CAM) was employed. This approach is a powerful method in order to implement sensitivity analysis [22].

In this method, the degree of sensitivity of each input parameter is assigned by establishing the strength of the relationship (r_{ij}) between the gold price and input parameter under consideration. The larger the value of CAM becomes, the greater is the effect on the gold price, and the sign of every CAM indicates how the input affects the gold price. If the gold price has no relation with the input, then the values are zero, while the input has a positive effect on the gold price when the values are negative.

Let *n* be the number of independent variables represented as an array $X = \{x_1, x_2, ..., x_n\}$, each of its elements, x_i , in the data array X is itself a vector of length *m*, and can be expressed as:

$$X_{i} = \left\{ x_{i1}, x_{i2}, x_{i3}, \dots, x_{im} \right\}$$
(8)

Thus, each of the data pairs can be thought of as a point in m dimensional space, where each point requires m coordinates for a complete description. Each element of a relation, r_{ij} , results from a pairwise comparison of two data samples. The strength of the relationship between the data samples, x_i and x_j , is given by the membership value

expressing that strength:

$$r_{ij} = \frac{\sum_{k=1}^{m} x_{ik} x_{jk}}{\sqrt{\sum_{k=1}^{m} X_{ik}^2 \sum_{k=1}^{m} X_{jk}^2}}, \quad 0 \le r_{ij} \le 1$$
(9)

The strengths of relations (r_{ij} values) between the gold price and input parameters are depicted in Fig. 8. As shown in Fig. 8, the most effective parameters on the gold price are silver price and oil price.



Fig. 8. Sensitivity analysis of input parameters.

VII. CONCLUSION

In this study, the performance of different methods for forecasting the gold price changes was investigated. The forecasting methods evaluated include the ANN and ARIMA models. The gold price data from April 1990 to July 2008 were used to develop various models investigated in this study. This comprises 220 input vectors and their corresponding output vectors from the historical data of gold price, which were divided into training and validation sets. Three performance evaluation measures, including MAE, R², and RMSE, are adopted to analyze the performances of various models developed. The results show that the ANN method is powerful tools to model the gold price and can give better forecasting performance than the ARIMA method. The forecasting results of ANN model during the validation phase outperform the ARIMA model.

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Guns Versus Butter Tradeoff: The Theory of Defense Quality Factor

Emre Dikici

Abstract—The aim of this paper is to reach sound recommendations for a developing country with regards to optimally balancing defense and welfare expenditures for maximum defense effectiveness in this age of increasing budgetary pressures over defense.

The paper analyzes the literature concerning the balance between defense spending and the sum of education and health expenditures, addressed as welfare expenditures in this study for simplification purposes. Then, the mechanism of how a qualified human capital affects the quality of defense as a public good is questioned, which lead the study to the theorization of "defense quality factor". This paper introduces "defense quality factor" to the literature of defense economics, defined as the multiplier that converts defense resources into defense effectiveness. The functioning of defense quality factor is demonstrated on a theoretical five-term budget allocation model. Finally, the paper concludes with recommendations for the optimal guns versus butter tradeoff decision for a developing country, in consideration of the defense quality factor theory.

Index Terms—Defense spending, defense quality factor, defense welfare tradeoff, guns versus butter tradeoff.

I. INTRODUCTION

The allocation of financial resources among budgetary items is one of the most concrete indicators of the policies followed and preferences set by governments. What history shows us is that there emerges considerable rise in defense expenditures before great conflicts, while defense spending tends to decline in times of peace, accompanied by a rise in allocations for public investment and social state expenditures having been neglected during times of war or crisis [1]. While welfare expenditure is exposed to cyclical fragility depending on the stability of states' social policies, government reshuffles, and political preferences, defense expenditure mostly relies on internal, regional and global security environment rather than domestic factors and takes more time for dramatic shifts. Moreover, studies in this context reveal that welfare and defense expenditures literally present competing budgetary priorities for getting a bigger slice out of the cake to the detriment of the other [2]. This study focuses on the relationship between defense and welfare expenditures as well as linking governments' preferences to their relations with international actors, thus adding the dimension of international relations and security strategies to this very field which is conventionally regarded in the context of defense economics.

II. DEFENSE AND WELFARE EXPENDITURE

Defense expenditures can be defined as public expenditures allocated for security and defense needs that are basically of military nature. There is no consensus among nations over which spending items to be accepted as defense expenditures. The manipulative efforts of governments about the declared budget figures, the lack of transparency with regards to defense spending due to various concerns, the bad-keeping of records and the failure at producing healthy data due to deficiency of technical infrastructure or lack of sensitivity are the main factors that forbid the accurate reflecting and assessment of defense spending [3].

The analysis of overlapping figures of the defense spending definition made by globally recognized bodies such as International Money Fund (IMF), United Nations (UN) and North Atlantic Treaty Organization (NATO) yields the payments made to the military and civilian personnel of armed forces, military health, education, infrastructure, acquisition, operations, maintenance and sustainment, research and development as well as military aid to other countries, civil defense/protection, border security and the expenses for official paramilitary organizations as the generally accepted defense expenditures [4].

Welfare expenditures, on the other side, are usually regarded in the context of social state and consist of education and health expenditures, social security expenditures, expenditures for supporting the children and the family, transfer payments and the expenditures made in the context of public support for the low-income mass against the unfair distribution of income [5]. Given that social security expenditures are somehow stable over time due to their nature of being the extension of governments' continuous commitments, the variance of these expenditures should be attributed to the aging population and the increasing number of veterans rather than cyclical preferences of governments [6]. For instance, in United States, social security expenditures have been rising due to the ongoing retirement of the so-called baby-boom generation born in the years following World War II when there had been an extraordinary rise in birth rates [7]. The expenditures relevant in the context of welfare defense-welfare tradeoff, on the other side, are education and health expenditures that are more flexible regarding cyclical variances due to government policies. In an econometric analysis carried out for Turkey, a significant negative correlation proving a clear tradeoff between defense and welfare expenditures (taken as the sum of health and

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education expenditures) had been revealed [8]. In line with the mentioned study, the welfare expenditures basic to preference will be presumed as the sum of public education and health expenditures in this paper.

III. DEFENSE-WELFARE NEXUS AND GUNS VERSUS BUTTER TRADEOFF

Guns versus butter tradeoff reflects the defense-welfare model of production possibility frontier which is a basic macroeconomic phenomenon. Production possibility frontier, utilizing the simplificative logic of classical macroeconomics, is a graphic displaying that a country with the possibility of producing only two types of items, has to portion out all of its resources among these two items in order to ensure an optimal balance. It also shows that inefficiency rises due to the rule of diminishing returns coming into effect towards the point where solely either one of two items is produced [9]. When guns versus butter tradeoff is modeled using production possibility curve, one of the producible items becomes guns for defense expenditures, as the other being butter for welfare expenditures.

Robert Gilpin carries the discussion of guns versus butter tradeoff and production possibility frontier to a very different platform of macroeconomics; the indifference curve [10]. According to Gilpin, an increase in the resources of a nation shifts the production possibility frontier outwards while the change in the relative prices of two items (guns for defense and butter for welfare) changes the form of the indifference curve, in other words, how the nation allocates its resources among two items. Econometric and statistical studies verify that defense and welfare budgets are rival figures [2], however it is not possible to define a universal optimal balance among two.

Most of the studies in the field of defense economics with regards to defense-welfare tradeoff basically focus on the effects of defense and welfare expenditures. Defense expenditures influence economic performance through three channels. Ram classifies them as demand side, supply side and security effects [11]. The fact that each unit of defense expenditure brings an alternative cost due to the abandoned investment opportunities in the framework of scarcity theory generates supply side effects similar to the guns versus butter tradeoff paradigm. Economists asserting that defense expenditures influence economy through the channel of demand fundamentally ground their points on the Keynesian multiplier effect [12]. Namely, in an economy which is not running at full employment of resources, a rise in defense spending causes a rise in aggregate demand. Since the resources are scarce, the rise in aggregate demand causes a decrease in unemployment through the rise of capital utilization. Therefore, an increase in defense spending results in economic growth. The supporters of this view ignore the supply side effects considering the assumption that there are always idle resources in a given economy. Security effects channel, the third channel explaining the nexus of defense spending and economic growth, refers to the economic value of national defense service yielded by defense expenditures which is a public good in the sense of economics [13]. A convenient and encouraging setting for private investment is

only achievable in a country where a secure environment is ensured by the government. On the other side, since there is almost general consensus in the literature over the positive effects of human capital creation via public investments in education and health on economic performance, the mechanism of this effect is considerably axiomatic.

IV. DEFENSE SPENDING AND THE RELATIONS WITH GLOBAL/REGIONAL ACTORS

It was stated in the second part of the study in the context of indifference curve that a shift in the relative prices of items representing defense and welfare would change the shape of both the production possibility frontier and the indifference curve. Gilpin asserts that this condition will generally result in a change in the foreign policy of the state as well [14]. In this part, the relationship between foreign policy and the defense preferences will be discussed in line with Gilpin's perspective, but by approaching to the causality he mentions from an opposite side.

It is possible to expect that the relations developed with global and regional actors by governments would influence defense expenditures via two channels. First one, similar with the security effects regarded as the fundamental value of defense spending [12], is the investability effect provided by the deterrence cover achieved by joining global and regional defense alliances. Second one is the opportunity of economic development provided by allocating more resources for welfare through reducing security concerns by, again, joining alliances, thus reducing the need for a high defense budget. In fact, these two effects pursue nested mechanisms so that they cannot be clearly distinguished from one another. However, this deterrence based on diplomacy rather than military power can be deceptive. For instance, avoidance of a NATO country from acquiring expensive high altitude air and missile defense systems with the expectation of enjoying NATO air and missile defense capabilities would be a decision of high risk since there is no precedent joint defense of an attacked NATO country in a high-scale conventional warfare in the context of NATO Article-5 and the commitments in this respect have not been tested under real circumstances yet. In this case, the dividend created via preferring the economic benefit of avoiding acquisition over the security benefit of acquisition can be defined as security risk dividend. Security risk dividend occurs as a result of not making the security investment that would develop measures against a threat and taking the risk of that threat with presuming/expecting that the risk will not happen. Then, security risk dividend can be calculated by subtracting the security benefit of making the security investment from the opportunity cost of making the avoided security investment. The security risk dividend concept which is defined in this paper for the first time will be discussed in detail in another paper as introduction of the term to the literature of defense economics.

It is a frequent situation that some countries, thanks to the defense alliances they develop, acquire the security and deterrance needs that they can not satisfy by themselves. For instance, Taiwan is able to shift the savings from defense resources for more productive purposes by pulling down its security concerns stemming from China, which she cannot absorb with its own resources, to a more reasonable level [15]. However, enjoying the benefits of a defense alliance with another country without sharing the costs is not a sustainable position. Let us remind at this point the quote from the former US Secretary of Defense Mr. Gates that "Future U.S. political leaders ... may not consider the return on America's investment in NATO worth the cost" [16] in view of the belief that operational and financial contributions by NATO-member European countries for NATO operations, chiefly the ISAF, are unacceptably low. Nevertheless, countries often leave the responsibility of fulfilling some defense functions to certain organizations or countries nowadays. For instance, the air defense of four Baltic countries (Iceland, Finland, Sweden and Norway) is being undertaken by NATO capabilities since 2004 as part of NATO Air Policing [17]. Besides, an acquisition consolidation trend led by Britain and France draws attention. We see in this context that countries tend to unite or collectivize some capabilities which serve the same purposes yet they used to own individually before, and we assess that this trend will increasingly continue in the short and middle term. This concept has been stated as "Smart Defense" by NATO Secretary General and has been introduced as an optimization-based defense planning solution in response to decreasing European military spending and the defense gaps of NATO-member European countries. The concept can be characterized by sustainment by pooling and utilization by alliance when needed of the capabilities that countries do not constantly need or cannot maintain due to exorbitant expenses. An example for this is the Heavy Airlift Wing composed of three C-17 aircrafts located in Papa Air Base, Hungary, and financed by a 12-country consortium [18]. Similar saving efforts are also shown in the framework of bilateral or triple alliances. For instance, Belgium and France have agreed upon using common infrastructure and facilities for training military pilots [19].

We shall hereby mention Japan and Germany, who first achieved a great economic power and then an unignorable military capacity after coming out defeated from World War-II. Both countries defined as "trading states" by Robert Gilpin with reference to Rosecrance have achieved their economic development under the U.S. defense umbrella and have utilized their sophisticated technology and qualified manpower for creating a serious defense industry afterwards [10].

Immanuel Wallerstein asserts that while dominant Powers in international political order focus on defense industry and military power, the actors in position of their rivals and successors attach priority to economic progress [20]. Indeed, analysis of both the examples of Germany and Japan as well as today's popular case of China reveals that defense capabilities are kept at minimal deterrent level necessary for maintaining the continuity of economic progress and that leaps in the field of military follow the maturation of economic growth until becoming a global economic power. Organski's Power Transition Theory assesses a nation's rise in a manner that would trigger a globally dominant power's concern of losing leadership as a distinct indicator of war [21]. In fact, both the world wars broke out as a result of German power in the context of Anglo-German rivalry. Similarly, Thucydides tells Athens's rise and Sparta's disquietude of this fact as the mainspring of the war in his 2500-year-old famous History of the Peloponnesian War [22]. The main point to take into account here is the fact that the primary factor for rising powers to be perceived as a threat by dominant powers is not solely economic or political reflections but generally their military capabilities and their (potential of) use of them. We can therefore conclude that the smart attitude for rising powers is first focusing on economic progress without agitating dominant powers as far as possible, then fortifying their military power via the resources provided by this economic capacity, and while doing this, staying away from devastative risks of war that would endanger all their historical gaining.

Governments have to provide domestic peace and political stability to safeguard their national security. A country that has not provided social peace and that hosts deep political splits as well as social fractures would feel less secure relative to a country with equivalent military and economic power. Therefore, another condition for establishing national security is political and social stability. The main tool for building up such stability is public policy, and the chief instrument for implementing public policy is the public finance. The state can provide stability with the expenditure preferences. Public finance undertakes this function by removing inequality in income distribution, providing minimally sufficient living standards for citizens, providing convenient infrastructure for development of human capital and raising educated and healthy generations (human capital). The allocation preference of scarce resources is the key element that reflects governments' ability ingenuity of simultaneously and sufficiently satisfying all the dimensions of national security. In this case, the relation of guns versus butter tradeoff with national security is not only subject to economic but also political dimensions.

V. A THEORY: DEFENSE QUALITY FACTOR

A. The Notion of Defense Quality

Before presenting a model suggestion at the end of the study, we find it useful to theorize the basic assumptions the model is built upon. First, considering the fact that military power is directly proportional to military spending, there needs to be a soft factor for converting defense capacity to defense quality. This factor that we name as *Defense Quality Factor (DQF)*, can be defined as the multiplier that reflects the effectiveness difference between two countries' armed forces making the same defense expenditure or having the same equipment at same quantities. Nominately, a country's *defense effectiveness (DE)* can be accepted equal to the multiplication of the aggregate value of resources allocated for defense (*defense resources*) and DQF which can be characterized more with the quality of manpower, as well as the technology, experience and moral values owned:

$DE = Defense \ Resources \times DQF$

In this equation, defense resources define all types of

resources that can be provided through financial means. For instance, physical potential such as soldier count, number of vehicles, arms and equipment, ammunition stockage can be quantified as a country's defense resources. Moreover, liquid resources, namely the budget and funds allocated for defense should be added on. As is evident from this definition, defense resources are directly proportionate to the aggregate cumulative defense budget.

As we briefly mentioned before, DQF, on the other side, is a multiplier that reflects the soft factors such as manpower quality, moral values, and the capacity to generate and use technology. DQF refers to the potential of high or low-efficient utilization of available resources by being greater or less than an index value of "1".

The defense effectiveness as being the multiplication of these two values comes out as a resultant value that can be used for comparing countries' military capacities, similar to the relative combat power value used in military jargon.

When this equation is analyzed, it can be noticed that one of the two multipliers resulting in the composite value of defense effectiveness can be increased through defense expenditures (defense resources) while the other can be done so by welfare expenditures (defense quality factor). The reason for particularly refraining from the use of term "directly proportionate" is that the welfare investment can be a high-yield domain where even a logarithmic relation can occur between DQF and welfare expenditures. Referring back to the acknowledgement of defense and welfare spending as rival budget figures, that a rise on one side (multiplier) would result in a fall on the other (multiplicand) renders the question of how the product will be affected, the principal unknown of the equation. Essentially, the solution of defense-welfare equilibria argument lies within this point.

Let us try solving this problem in the framework of one unit of budget transferred to welfare expenditures renouncing defense expenditures. This one unit transfer would result in one unit of fall in the variable of defense resources. Provided the rise at DQF caused by this transfer happens to be the same in ratio, this would not affect the product, namely the defense effectiveness. The preference at this point displays the same character as the preference between two items having a 450 indifference curve which is not concave or convex. Whereas, the investment on human capital, besides positively influencing manpower quality, technology development and utilization capacity and moral subjects, also results in the domestic production capability of defense items, reduction of production costs, and a fall in the number of soldiers needed, thus positively influences both the factors. Then, the effect of this transfer would be in a direction to increase the value of the product, namely the defense effectiveness. However, in just the same way as the rule of diminishing returns, as the defense expenditures go below the level necessary for minimum deterrence, defense effectiveness begins to fall. Therefore, a defense spending level which should be autonomously maintained is referable.

B. An Explanatory Fictional Model

In this part of the study, we will try to draw a conclusion about defense-welfare equilibria by examining the previously theorized DQF's effects over a model. To that end, we will present the defense effectiveness values as results of various defense-welfare resource allocation ratios in five consecutive terms for a country which has an initial GDP of one trillion. The assumptions to be used in this model are that;

- The sum of defense and welfare expenditures is fixed at 10% of the country's GDP,
- 2) A rise in welfare expenditures result in a rise in the DQF on the subsequent term, and,
- The DQF and defense effectiveness (DE) values of the first term are regarded as index values and taken as "1".

Also, for simplification purposes, already present welfare and defense assets (i.e. active schools, hospitals, arms and equipment in inventory) are not quantified and are excluded in the model. Since the impact of the preferences is questioned, the financial resources subject to cyclic budgetary tradeoff are taken into account. The monetary values given in the Table I below are normalized to first term current prices, that is, net of inflation.

TABLE I: FIVE-TERM DEFENSE-WELFARE ALLOCATION MODEL

TABLE I. TIVE TERM DELENSE WEELARE ALEOCATION MODEL							
Term	GDP	Def.	Def.	Wlf.	Wlf.	DQF	DE
	(USD)	(%)	(real)	(%)	(real)		
1	1 TN	2	20 BN	8	80 BN	1	1
2	1,3 TN	2	26 BN	8	104 BN	1,2	1,56
3	1,5 TN	1,8	27,5	8,2	122,5 BN	1,4	1,93
			BN				
4	1,8 TN	1,5	27,5	8,5	153 BN	1,7	2,34
			BN				
5	2 TN	1,5	30 BN	8,5	170 BN	2	3

Def. (%) = Defense expenditures as percent of GDP,

Def. (real) = Real value of defense expenditures in constant US dollars,

Wlf. (%) = Welfare expenditures as percent of GDP,

Wlf. (real) = Real value of welfare expenditures in constant US dollars,

DQF = Defense quality factor,

DE = Defense effectiveness (over index value of "1").

Now, in the light of DQF theory, we will discuss how defense-welfare preferences results in. Above table does not reflect a five-year model, but the values taken from five different crosscuts from a middle-term program that spans over a 10-15 years period.

The first thing noticeable in the model is the fall in defense expenditures as a percentage of GDP while defense spending in real dollars rises. As the GDP doubles at the end of the program, a 25% fall in defense expenditures as a percentage of GDP has occurred, whereas real defense spending has risen by 50% due to the GDP growth.

The second interesting point is that, defense quality factor doubles while defense effectiveness triples at the end of the program. The results that defense effectiveness rises by 200% while defense spending as percentage of GDP falls and real defense spending rises by only 50% set forth a remarkable conclusion given the validity of the assumptions the model grounds on.

The numbers given in the table are, of course, fictional. However, they are built in a logical integrity in consideration of the assumptions theorized under the title of defense quality factor. So, is it possible for a developing country to launch a similar allocation model and incorporate it to national development programs? There are several issues the statesmen have to decide for this. For instance:

1) What are the national objectives of the country in regional and global scale? What is the minimum level to

be reached in each national power element categories (i.e. military power, economic power, etc.) for providing them?

- 2) What is the lowest necessary level of deterrence for the country within the program period considering the current and potential regional and global developments, threats and risks?
- 3) What are the irrecusable capabilities to own for ensuring the minimum necessary level of deterrence?
- 4) What is the projection concerning the contribution of national defense industry in the acquisition of defense items and services as well as the planning with regard to this?
- 5) What will be the market share of the national defense industry in global defense market?
- 6) How will the transitivity of technology, knowledge and qualified manpower between defense industry and productive (civilian) sectors be?

A program to serve as basis for budget planning with regards to defense-welfare preference can be built only after answering the above questions. Certainly, this program should have the flexibility areas to enable responding to unforeseen developments; moreover should it provide feedback for the program monitoring the quantifiable impacts of the policies adopted sensitively and with neutrality.

VI. CONCLUSION

As discussed in the previous part, military, international, economic, political and social systems stand out as the rings that compose the chain of national security system. Military subsystem should be regarded as a short and middle-term security instrument as it essentially provides deterrence against the current threat environment. International subsystem acts as the weakest ring of the national security chain due to its slippery and fragile structure, inherent unreliability as well as the unpredictability and uncontrollability of the decision makers. Political and social subsystem is the structure to constitute the spirit of national security system which can be defined as the software of the state mechanism. The distinctive feature of this structure as opposed to many other immaterial structures is its ability to be fortified through material capabilities. Lastly, economic subsystem is essentially the structure that feeds the ingredients of the national security compound and comprises the resources and the control mechanisms of the material inputs.

With reference to this analytical approach, we conclude that countries should fortify the political and social structure comprising the core of all dimensions of national power particularly through economic structure that feeds all subsystems in order to warrant their national security in the long run. Yet, the making of a deterrent military power can be possible principally through the continuous and efficient interaction of two input groups being the economic and human resources. Welfare policies and investments devoted to human capital development are essential for ensuring the technological, industrial and commercial competitiveness needed for economic power in the long run. Likewise, the health of political and social structure can be ensured and maintained through the same policies and investments. Within this scope, we conclude that welfare policies and investments should be the privileged and preferred investment domain as they provide basis for the other dimensions of national security.

The defense quality factor theory that we put forth in consideration of the thought that defense effectiveness is related to information superiority, technological superiority and human capital quality as well as the budget allocation table modeled based on that theory are in a sense the summary of this study. For the case of a developing country, the defense expenditures should be kept at a level so as to provide the minimum necessary level of deterrence and to enable the R&D and conceptual design activities that foster the nationalization of defense industry until the economic progress and qualified human capital formation is matured. It should be avoided to respond to evolving risks and threats in a way that would overbalance the defense expenditures unless they endanger the strategic vision. It should be aimed to prioritize welfare expenditures, particularly the education in order to reach a human capital formation, national technology and defense industry that would create a multiplier effect over defense resources. For achieving the national objectives, a national power projection following the consecutive levels of reactive regional deterrence, proactive regional deterrence, active regional power and active global power should be set forth and an accordingly budget, resource and effort allocation should be planned.

In brief, the conclusion reached in the context of defense-welfare argument, using the Keynesian simplification in the beginning of this paper, is that a country capable of producing butter and guns only should prefer to produce butter which has a greater marginal utility at an assumed equilibrium point for providing the manpower that can produce and use higher quality and more effective guns in the future. In fact, the Turkish saying of "Let people live so the state would live" summarizes the findings of this paper by emphasizing the importance of human capital formation for the continuity of the state.

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The Influence of Individual Characteristics on Auditors' Intention to Report Errors

Arezoo Aghaei Chadegani, Zakiah Muhammaddun Mohamed, and Takiah Mohd Iskandar

Abstract—Reporting detected errors is an important ethical behaviour of auditors which is one dimension of the quality of auditors' work. The main objective of this study is to investigate the effects of auditors' individual characteristics including personality type and locus of control on auditors' intention to report errors. Data are collected by distributing 1000 mail questionnaires among senior auditors in Malaysia. Applying multiple regression analysis, the results reveal that there is a significant and positive relationship between auditors' individual characteristics and their intention to report errors. In fact, research findings indicate that auditors with personality type A and internal locus of control have more intention to report errors than auditors with type B and external locus of control.

Index Terms—Behavioural intention, reporting errors, individual characteristics, personality type, locus of control.

I. INTRODUCTION

The results of National Business Ethics survey (2007) emphasized that unethical behaviour of auditors is a serious problem in auditing profession and the quality of auditors' work. Unethical behaviour of auditors resulted in high-profile financial scandals and business failure, loss of reputation and litigation costs [1]. Many blamed external auditors for failing to report errors that led to these failures [2]. Therefore, researchers try to determine influencing factors on auditors' behavioural intention to increase their intention to act ethically. Based on theory of planned behaviour (TPB), auditors' behavioural intention is determined by attitude toward behaviour and perceived behavioural control as individual factors [3]. Moreover, according to Financial Reporting Council (2008), individual characteristics as well as auditors' personality are the key drivers in determining auditors' behavioural intention and the quality of their work. Although, there are some studies on quality audit which focused on the relationship between individual characteristics and reduced audit quality behaviours, but they have not examined the effect of these variables on auditors' behavioural intention. This study aimed to fill this gap by investigating the effect of individual characteristics including personality type and locus of control on auditors' intention to report errors. Therefore, the main research objective of this study is to examine the effect of auditors' personality type and locus of control on auditors' intention to report errors.

In order to investigate the effect of individual characteristics on auditors' intention to report errors, the research questionnaires are distributed among 1000 senior auditors in Malaysia and 174 completed questionnaires are received. The results show that there is a significant relationship between auditors' individual characteristics and their intention to report errors. This study contributes to quality audit studies in individual level by investigating the effect of auditors' personality type and locus of control on auditors' intention to report errors. In fact, the quality of auditors' work is measured by auditors' intention to report errors for the first time.

II. LITERATURE REVIEW AND HYPOTHESES DEVELOPMENT

Auditors' behaviour is reflective of his personality and individual characteristics when performing audit service [4]. Reference [5] argue that more ethical oriented individuals are more motivated in their intention to behave ethically than less ethical oriented people. Therefore, individual characteristics of auditors have a main role in determining the quality of their work through influencing their decision making and behavioural intention [6]. Individual characteristics have been measured using different variables in various auditing studies. These variables are auditor's ethical reasoning [7], goal orientation [8], professional scepticism [9], auditor's virtue [10], locus of control [11] and personality type [12].

According to reference [13] personality type behaviour and locus of control are two most exhaustively researched personality constructs that is related to ethical behavioural intention. Theory of planned behaviour also suggests that auditors' behavioural intention is determined by auditors' perceived behavioural control and attitude towards behaviour [3]. Perceived behavioural control refers to individuals' perception about having control over the behaviour [14]. Reference [15] argues that auditors' perception about having control over their behaviours refers to individuals' locus of control. Attitude towards behaviour also refers to individuals' common feelings about behaviour and their evaluation about the outcomes [16]. Reference [14] argues that auditors' ethical decision making and behavioural intention are influenced by personality type which represents individuals' ethical orientation. While, our dependent variable is auditor's behavioural intention to report errors, locus of control and personality type which associated with auditor's ethical behavioural intention are chosen as an individual characteristics.

A. Personality Type and Intention to Report Errors

Based on personality type theory, individuals are categorized into two groups contrasting type of personality;

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high strong type A and easy going type B. Type A individuals are constantly striving to attain material things or achievements in the shortest period of time. But, Type B personalities may be more imaginative, creative and philosophical. Reference [2] mention that individual with type A personality are more competitive, aggressive, ethical oriented and having more commitment to work than individuals with type B personality. Reference [17] believes that these characteristics may have implications for behavioural intention and quality audit literature.

Research in business ethics has shown that personality type A is directly related to individuals' ethical orientation [18]. As reporting errors and misstatement and quality of auditors' work involve ethical decision making, personality type could be affect auditors' intention to report errors and the quality of auditors' work. Reference [18] investigates the relationship between Machiavellianism and type A personality and ethical orientation. They found that Machiavellians tend to have type a personalities but tend to be less ethically-oriented. They conclude that type A personalities are more ethically-oriented than type B personalities.

Reference [19] argues that personality type A/B is found to correlate to ethical sensitivity and decision making such as reporting unethical actions. He found that individuals scoring high in type a behaviour are less likely to engage in unethical behaviours. Reference [2] believes that as personality type was confirmed in prior studies to be associated with ethical orientation, it may have considerable implication in regards to quality of auditor's work. For instance, if individual have more ethical orientation, they would be more likely to report errors and increase the quality of their work. He investigates the relationship between auditors' personality type and their intention to involve in reduced audit quality behaviours. He concludes that auditors with type A personality are less likely to engage in reduced audit quality behaviours and unethical actions. Therefore, it is appropriate to hypothesis that auditors with type A personality may have more intention to report errors than type Bs and increase quality of audit work because they are more ethical oriented. Thus, the first and second research hypotheses are:

 H_1 : There is a positive and significant relationship between auditors' personality type and auditors' intention to report errors.

 H_2 : Auditors with type A personality have more intention to report errors than auditors with type B personality.

B. Locus of Control and Intention to Report Errors

Another personality trait which affects the auditor's behaviour is an individual's locus of control which is also known as self-evaluation behaviour [20]. Based on locus of control theory individuals are classified as either internals or externals [21]. Individuals who think that events which occur in their lives are consequence of their own personality, behaviour or efforts are internals, whereas individual who believe events are a function of external power beyond their control or manipulation are externals [13]. Reference [22] mention that internals are more proactive and goal oriented and believe that they can influence the outcome of judgment or decision process directly. Although, externals are more

passive and prefer structured situation, they believe other factors or aspect of the situation determine the outcome. Internals show higher job motivation [23], more organizational commitment [24] and high ethical orientation [18]. On the other hand, externals believe that outcomes are more attributable to superior decisions and peers' behaviour or the occurrence of luck and chance. Therefore, instead of being in control, they are being controlled by environment [22]. Prior studies have shown that individuals with internal locus of control are more likely to take responsibility for the consequences of ethical/ unethical behaviour and less likely to rely on external forces comparing internals [15].

Locus of control (LOC) clarifies individual's perceptions about relationship between their actions and outcomes [25]. Reference [26] states that locus of control is an individual characteristics that measure the extent to which people believe they are responsible for the consequences of their behaviour, intentions and outcomes. Prior studies have shown that when internals accept a position with a firm they tend to have a higher commitment to the firm relative to externals. Committed employees should work harder, remain with organization and contribute more effectively to an organization [27]. Reference [27] suggests higher committed employees perform better than less committed ones. Therefore, auditors with internal locus of control have higher level of organizational commitment and more intention to report errors and increase quality of audit service [28]. On the other hand, auditor's intention to report errors and misstatement is related to ethical decision making and their ability to resist of clients temptation. Reference [29] suggests since externals rely on fate, luck and chance they are more likely to have intention to behave unethically.

Reference [15] investigated whistle blowing intention among managers, using locus of control within the context of theory of planned behaviour. He found that managers with internal locus of control are more likely to blow the whistle and act ethically compared to those with external locus of control. Therefore, it is predicted that there is a positive relationship between internal locus of control auditors and their intention to report errors and quality of auditors' work. Thus, the third and forth research hypotheses are:

 H_3 : There is a positive and significant relationship between auditors' locus of control and auditors' intention to report errors.

 H_4 : Auditors with internal locus of control have more intention to report errors than auditors with external locus of control.

III. RESEARCH METHODOLOGY

This research utilizes a survey design where a mail questionnaire will be developed to collect data for the study. The use of mail questionnaire survey is the most suitable method to address the research questions in this study. Since, it is a common approach in business ethic studies and also is appropriate for research question which asking about participant's self-reported beliefs and behaviours [30]. This study combines the use of questionnaire and vignettes design (short, hypothetical cases) like other ethical studies in self-reporting issues in auditing (e.g. [30]-[32]).

A. Research Instrument

The research instrument is divided into 3 sections. Section I describes vignettes or scenario which indicates error in financial statements. This part measures auditors' intention to report errors of financial statements. Section II relates to locus of control variable. Locus of control instrument is adapted from [33] based on instrument developed by [34]. This section has 16 items to measure locus of control orientation related to organizational outcomes [34]. Eight items measure "internal" and eight items measure "external" control over work specific issues. Respondents are asked to identify the relationship between outcomes and causes using 5-point scale. The score range is from 1 (disagree very much) to 5 (agree very much). The minimum score is 16 and the maximum is 96 [34]. Following prior studies, respondents with scores above median are classified as individuals with internal locus of control and those with scores below median are classified as individuals with external locus of control [34]. The instrument's reliability and validity have been deemed acceptable in prior studies (e.g. [28], [33]).

Section III relates to personality type variable. For measuring personality type of auditors, Blumenthal's type A self-rating instrument adapted from [2]. The instrument consists of 38 personality characteristics. Participants are asked to point out the extent to which each personality characteristics defines them. When all responses have been scored, individuals with above the median score are classified as type A personality and those with below the median score are classified as type B personality [35].

B. Sampling

The population of this study consisted of all practicing auditors in Malaysia that are registered as a member of the Malaysian Institute of Accountant (MIA). However, among all these auditors (MIA members), only audit seniors will be selected in the sample. Audit seniors are in charge of field work, they are located at the client's office for most of the engagement [36]. Therefore, they are more likely to detect errors in client financial information. Reference [37] argue that senior auditors are the foot soldier's and do the maximum work on an audit among the different hierarchical levels and they are exposed to the client the most. Thus, the rationale for choosing audit seniors is based on the argument that reporting errors are usually made by members close to the inner working of an organization and they detected errors more than other levels therefore they are in a position to report detected errors to superior levels (e.g. [31], [38]).

1000 mail survey is distributed among senior auditors who are MIA members with the assistance of the MIA. MIA had prepared the list of respondents (Labels) based on the requirement given by the researcher with the proviso that only MIA members that are currently working as audit senior in audit firms should be selected as respondents. The mail questionnaire administration results in a final usable 174 responses for analysis (17.4 % response rate). Recent studies by [30] and [39] who utilized Institute of Internal Auditors Malaysia (IIA) get 17 % and 18 % response rate respectively. Therefore, the response rate of 17.4 % of this study is justified based on these prior studies.

IV. PRIMIRALITY DATA ANALYSIS

A. Validity

Content or Face Validity of the research instrument is checked by conducting pre-test and pilot study. 5 academics that have audit experience are asked to read the research instrument and give their ideas and comments about the questionnaire. For pilot testing, 30 audit seniors who are the member of MIA filled up the questionnaires and answered the pilot test questions. Then, the research instrument is improved based on respondents' comments and recommendations.

B. Reliability

In terms of reliability, Cronbach's Alpha is checked for all research variables. The results indicate that the Cronbach's Alpha reliability coefficients for all variables are above 0.8. Generally, reliabilities of less than 0.6 are considered to be poor, those of 0.7 are considered acceptable, those above 0.8 are good, while the closer the reliability coefficient to 1.0, the better.

C. Normality and Malticollinearity

For developing multiple regression models, the distribution of dependent variables must be normal. The analyses on skewness and kurtosis support the normality distribution of the data as the value of skewness fallen in the range of -1 to +1 and the value of kurtosis is in the range of -2 to +2 for all variables. Moreover, normality is checked through the examination of residual statistics and graphical examination of scatter plots and histograms.

In addition, for testing multicollinearity among independent variables, Variance Inflation Factor (VIF) is used. The results show that the VIF scores for all independent variables are below 2. Therefore, multicollinearity may not be a concern in this research.

V. MULTIPLE REGRESSION ANALYSES AND RESEARCH RESULTS

TABLE I: MULTIPLE REGRESSION RESULTS							
	В	S.E	β	t	sig		
Constant	0.03	0.29		0.12	0.90		
Personality Type	0.90	0.16	0.36	5.61	0.00*		
Locus of Control	0.90	0.15	0.38	5.93	0.00*		
$R^2 = 0.37$							
<i>F</i> -Value = 51.739	<i>F</i> -Value = 51.739						

Note: *Correlation is significant at the 0.01 level

A standard multiple regression and independent sample t-test are used to investigate the hypothesized relationship between independent variables and dependent variable. Table I represents the results of multiple regression analysis. Based on the results, the linear combination of 2 independent variables significantly predicts auditors' reporting intention, $R^2 = 0.37$, F(2, 171) = 51.739, $p \le 0.01$. This model accounts for 37% of the variance in reporting intention. The F ratio of

51.739 is statistically significant at 1% level. In fact, the regression model appears to be efficient in predicting auditors' reporting intention. A review of the regression coefficients indicates that both personality type and locus of control have positive and significant relationship with auditors' intention to report errors and misstatement. But, the beta weights (β) reveal that locus of control has more effect on auditors' reporting intention than personality type.

Table II shows the results of t-test for comparing auditors' intention to report errors between auditors with personality type A and B and also auditors with internal and external locus of control.

TABLE II: RESULTS OF T-TEST

	Ν	Mean	S.D	t	sig
Personality Type:					
Type A	115	3.36	0.91	-6.926	0.00*
Type B	59	2.12	1.20		
Locus of Control:					
Internal	96	3.48	0.92	-7.674	0.00*
External	78	2.27	1.11		
Notes *Constation is a	anificant	at the 0.01	l1		

Note: *Correlation is significant at the 0.01 level

Based on the results, the difference between two groups (personality type A and personality type B) is significant for reporting intention. The mean for personality type A is 3.36 which is more than mean of personality type B (2.12) for reporting intention. This result shows that auditors with type A personality have more reporting intention than auditors with type B personality. Moreover, the results show that there is a significant difference between auditors' reporting intention with internal and external locus of control. The mean for internal locus of control is 3.48 which is more than mean of external locus of control have more intention to report errors than auditors with external locus of control have more intention to report errors than auditors with external locus of control. Based on these results all four research hypotheses are supported.

VI. CONCLUSION, LIMITATION AND FUTURE STUDIES

This research investigates the reporting intention of external auditors in Malaysia. Specifically, this study examines the effects of individual factors including personality type and locus of control on auditors' intention to report errors. The results of testing hypotheses support the relationship between personality type and intention and reveal that auditors displaying type A personality have more intention to report the detected errors and they are more likely to behave ethically rather than auditors displaying type B characteristics. One explanation for this result offers by [18]. They conclude that type A individuals are more ethically oriented than type B individuals. Thus, it is no surprise that type A auditors have more intention to act ethically and have more intention to report the detected errors. This result is consistent with [40] and [2] who find that auditors with type A personality are less involved in unethical behaviours and act more ethically compare to auditors with type B personality. Reference [12] argue that similar to the results of [41], the positive beta coefficient indicates that participants displaying type B characteristics are more engaged in unethical behaviours rather than auditors displaying type A characteristics. Although not conclusive, the results of these studies provide some explanations for the reasons that underlie the behaviour of type A and type B auditors surveyed in this study. However, the results of this research are inconsistent with [42], as they find no significant effects of personality type on behavioural intention. One reason is that they used type A instrument in a short form with six questions. Whereas, in this research the completed type A instrument with 38 questions is used.

Locus of control is also predicted to significantly influence auditors' intention to report errors. The results support this relationship and reveal that auditors with internal locus of control have more intention to report the detected errors and they are more likely to behave ethically than auditors with external locus of control characteristics. This result is consistent with [28], [33] and [34]. The results are also consistent with Chiu (2003) who finds that individuals with external locus of control have less intention to report the wrongdoings. His results reveal that auditors with external locus of control are not take responsibility of blowing the whistle, even when they considered whistle blowing ethical, but auditors with internal locus of control have more intention to report wrongdoings. He argues that as individuals with internal locus of control more believe in their own efficiency, they are more motivated to engage in prosocial and ethical behaviours such as reporting wrongdoings or reporting the detected errors.

Several limitations emerge when evaluating the research results. First, the sensitive nature of ethical behavior brings into question the honesty of responses. Second, the most obvious limitation of this research is using self-reported data to determine auditors' intention to report errors. In fact, all data are obtained from one source – the respondents. This may raise concerns about the validity and generalisability of research results.

While this study suggests a new ground in investigating the relationship between individual factors and auditors' intention to report errors in Malaysia, there is still a need to conduct more studies on this topic. For example it is essential to examine the effect of firm and team factors on auditors' intention to report errors. Also, it is suggested to use other methods such as interview and experimental design for investigating the effects of these factors on auditors' behavioral intention.

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The Comparative Analysis of Gender and Social Network among Malay SMEs Entrepreneurs in Malaysia

Ehsan Fansuree Surin, Nurul Hafez Abd. Halil, and Oswald Timothy Edward

Abstract—The purpose of this paper is to make comparison in terms of social network between male and female Malay entrepreneurs in Small and Medium Enterprises (SMEs) in Malaysia. Social network is defined as interrelationship between the entrepreneurs and their contact (alter) in business venturing. However, there is limited understanding on how the entrepreneurs use their social network. Moreover, there is dearth attention given to investigate the social network in developing country especially in Malaysia. Both social network theory and structural perspective were employed in this quantitative-based study. The data gathered through the mail questionnaire method in which 93 are male and 72 female respondents representing 53 percent responded. Using t-test, the study reveals that there is no significance difference in terms of network size, network activity and network density for both genders. Implications and direction for further research are also presented.

Index Terms—Gender, Malay, SMEs, social network.

I. INTRODUCTION

A social network is defined as interrelationship between the entrepreneurs and their contact (alter/s) in business venturing [1]. The conception focus on the actor who connected to entrepreneur and a bulk of researches has analysed the social network between the entrepreneurs and their alter(s). The actors in social network comprise of family members, friends, relatives and business associates [2], [3]. With the aim to survive in the business, the social network is considered as a weapon to secure important resources for SME firms [4].

Over the past three decades, most of the scholars have given much attention in exploring the cause and effect of the social network [5]-[10]. However, little attention given to make a comparison the utilisation of social network between the gender [11]. Moreover, there has been little serious research carried out on social network theme in Malaysia especially Malay ethnic [12], [13]. Therefore, this paper endeavors to report the research findings on the adoption of social network properties; network size, network activity and network density between men and women Malay

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entrepreneurs in SME firms in Malaysia. The research tries to answer the question of: Do Malay male and female entrepreneurs have significant difference in terms of network size, network activity and network density?

In addressing the above question, we make the following contributions. First, little attention given to study the social network in Malaysia, therefore this study shed light on the structural perspectives to spark the attention in understanding the social network phenomenon. Second, entrepreneurship scholars have failed to notice on how the social network is used and give the benefit to the firm [14]. Therefore, we advance the research on the value of social network specifically on Malay entrepreneurs who struggle to survive in business in their mainland. Lastly, most of the social network; however the current study employs the comparative study between male and female. We hope that the findings of this study will serve a benefit to the entrepreneurs especially for those who have an intention to start the business.

II. LITERATURE REVIEW

A. Social Network Theory

The social network theory was popularised in the middle of 1980s and sought to explain the capability of the network to help the entrepreneur in accessing the resources [2]. This theory, on the other hand, integrates the concept of relationships into the exchange equation. In social network research, the person who we investigate their network is called ego, meanwhile the person that connect with the ego is called alter.

Social network is also broadly accepted as a tool for securing resources from alters [15]. The social network is largely characterised as personal ties and connections that are built on trust [16]. Trust is essential to the social network as it sustains and cultivates the network. Members of the social network trust one another to abide by the terms of the network into which they voluntarily enter. This trust is based on repeated interactions, exchange of resources and shared expectations of behaviour which is strengthened by the accepted norms of the network.

This paper adopted the structuralist perspective to measure the social network. The perspective explains the configuration of network ties [17]. The perspectives included in this paper are network size, network activity and network density.

B. Network Size

With respect to the gender differences, reference [18] found that women have smaller network size compared to

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men. Reference [19] revealed similar results that showed the significant difference in terms of the number of the network size where female reported to use larger relatives than the men. Similarly, scholar also noted that women used a higher degree of relatives in their social network compared to men [20]. Therefore, the following hypothesis is proposed;

 H_1 There is a significant difference between men and women entrepreneurs for network size

C. Network Activity

Research has shown that men invest more time in network activity [18]. Similarly, reference [21] asserted the evidence that there is a significant difference for men and women in amount spent in developing and maintaining their contact in Ireland. A research on financing in Bulgaria found that women may be at a disadvantage in their social network due to the less degree of networking [22]. Similarly, women encountered discrimination in social network especially when dealing with men entrepreneurs in Pakistan [23]. Therefore, we introduced the hypothesis as:

 H_2 There is a significant difference between men and women entrepreneurs for network activity

D. Network Density

The comparative study on gender associated with network density remains less. However, reference [21] concludes that men have denser network compared to women. This views however against the discovery by others researchers that found women entrepreneurs' alters have formed the closely knit in their network [24]. Similarly, research found that women entrepreneurs' networks have higher degree in network density [25]. Another investigation however found that both genders depend on male contact to get an advice [21]. Further, family members made up the significant roles in the women network [19], and women tend to name their friends and family members as a primary contact [26]. Women tend to use the strong ties (friends and family members) because they did not have access to the professional bodies [7]. In addition, women confront with inadequacy of time to create a social network therefore avoid the close relationship with others [27]. Therefore, the hypothesis stated as:

 H_3 There is a significant difference between men and women entrepreneurs for network density

III. RESEARCH METHOD

A. Sample and Setting

Our unit of analysis is Malay entrepreneur. For the purpose of this paper, we define the entrepreneurs as the owner-manager that running their business for the profit. Those owner-managers will be SMEs that involve in manufacturing industry. Manufacturing industry is selected based on the following reasons; a) The SMEs in the manufacturing industry form a vital component of the Malaysian economy in terms of their numbers and contributions to the nation's economy [28], b) a research on network is likely to be more valid by using single-industry studies which the network emphasizes on strategic critical linkages [5].

The sample of manufacturing companies was compiled through the following sources; SME Corporation Malaysia, Federation of Malaysian Manufacturers (FFM) and Malaysia External Trade Development Corporation. The list was then analysed and a new list was compiled to only include manufacturing companies. The listing were then categorised the companies according to their geographical zones (North, South, East Coast and Central) and stratified random sampling was used to select the sample [29]. Five main sectors were chosen into the listing; food and beverage, wood-based product, rubber-based product, electric and electronics and textiles, apparel and leather represent 60 percent from the total number of SMEs in Malaysia. The data were collected through mailing surveys to the owner-managers listed in the sample directory. Overall, 165 (53%) completed questionnaires were received within four months.

B. Measurement of Variables

The self-generated answer to indicate the number of the contact by the owner manager through the ego-network method and a simple count of network contact as an indicator of network size are consistent with prior research to examine the entrepreneurial network [18]. One month was given due to recall back purposes and the use of shorter time frame deems appropriate to avoid respondents' recall lacks validity.

In order to examine the network activity, entrepreneurs were required to answer a questionnaire regarding the frequency of interactions with their alters. The 5-point Likert-type scale: 1 (very seldom) to 5 (very often) was used to assess the frequency of interactions with the four categories of alters; family members, relatives, friends and business contact.

To measure the network density, the question asked the entrepreneurs to nominate five names of their alters they had been in contact with over the last month. Based on the name listed by entrepreneurs, they are then asked to rate how familiar each alter is with other members in the network through three items which are adopted and modified from [30]. The respondents were then asked to indicate on 5-point Likert-type scale: 1 (strongly disagreed) to 5 (strongly agreed).

IV. ANALYSES AND FINDINGS

A. Descriptive Analyses

Table I reveals the respondents' and firms' profile. The respondents consist of male (93) and female (72). Regarding the age, majority of the respondents were above 45 years old (41.2%), 41 to 45 (20%), 36 to 40 (18.8%), 31 to 35 (12.7%), whereas only 7.3 percent were 26 to 30 years of age. For marital status, more than half of the respondents were married (86.7%), 12.1 percent of the respondents were single and the remaining (1.2%) were divorced.

For the respondents' business type, the sample consisted of sole-proprietorship (65), private-limited company (63) and for partnership-based company (37). The majority of the firms come from food and beverage sector (70.9%), while wood-based product sector represents 21.8 percent,

rubber-based product (3%), electric and electronics (2.4%) and textiles, apparel and leather sector represents (1.9%). Most of the firms operated in Southern region (57), followed by Western Northern region (41), Northern region (36) and Eastern region (31).

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TABLE I. THE RESPONDENTS	AND PIKMS IF	OFILE
Firms' Profile	Number	Percentage
Gender		
Male	93	56.4
Female	72	43.6
Respondents' Age		
25 or under	0	0
26-30	12	7.3
31-35	21	12.7
36-40	31	18.8
41-45	33	20
46 and above	68	41.2
	00	11.2
Marital status		
Married	143	86.7
Single	20	12.1
Divorced	2	1.2
Dirotecu	-	
Business type		
Sole proprietorship	65	39.4
Partnership	63	38.2
Private limited	37	22.4
Titvate innited	51	22.1
Business sector		
Food and beverage	117	70.9
Wood-based product	36	21.8
Rubber-based product	5	3
Electric and electronics	4	2.4
Textiles, apparel and leather	3	1.9
rentites, apparer and realiter	5	117
States and (Region)		
Perlis (northern)	4	2.4
Kedah (northern)	8	4.8
Pulau Pinang (northern)	10	6
Perak (northern)	14	8.4
Selangor (central)	37	22.4
Kuala Lumpur (central)	4	24
Negeri Sembilan (southern)	11	6.8
Melaka (southern)	11	6.8
Johor (southern)	35	21.2
Dahang (east coast)	16	21.2 0.7
Lalantan (aast agast)	0	7.1 4.0
Terrenagony (cost coost)	0 7	4.7
rerengganu (east coast)	1	4.2

B. Hypotheses Testing

The t-test analysis is employed to measure the differences in network size (log), network activity and network density for men and women entrepreneurs. The distribution of the size of the network is skewed, therefore logarithm method is used to normalise the data since the parametric statistics requires the normal distribution among the sample [31]. Table II gives overall picture on t-test findings on three variables of social network on gender. Given the Levene's test for all the variables have a probability greater than .05, the assumption of population variances are considered equal. For network size (log), a significance value of 0.249 (greater than 0.05), indicates that there is no significant difference between the gender. Therefore, we concluded that there was no significant difference between male and female entrepreneurs in terms of network size and H_1 is rejected. TABLE II: THE RESULTS OF INDEPENDENTS GROUP T-TEST

t	Sig.	Results
-1.157	0.249	Not supported
-1.361	0.176	Not supported
-0.759	0.449	Not supported
	<i>t</i> -1.157 -1.361 -0.759	t Sig. -1.157 0.249 -1.361 0.176 -0.759 0.449

The second hypothesis comprises of network activity showed that p value 0.176 is higher than 0.05. Therefore, the second hypothesis is also rejected. The last hypothesis for network density, it can be seen that significance value of p=0.449 is greater than 0.05, therefore we reject the H₃. We conclude that there was no significant difference between men and women entrepreneurs in network density.

V. DISCUSSION

The findings of the current study provide the view that gender does not provide the significant difference in terms of the utilisation of the social network properties: network size, network activity and network density. The first finding indicates that men and women are not significantly different in terms of network size. Our finding supports the earlier finding. Previous research discovers that men and women entrepreneurs have almost similar in terms of average size of alters [21], [32]. Further, the findings with respect to network activity suggest there is no significant difference between the genders. This finding supports the view of reference [11], [21]. Their studies state that men and women have used the network at the same rate. Finally, the result indicates that men and women have no significant different regarding the network density, thereby again consistent with the view of previous investigations [21], [33]. Prior researcher has found both genders have embedded in their social network with high degrees of interconnectedness [34].

VI. CONCLUSION

In conclusion, our study extends the exploration on social network-based research by comparing the utilisation of social network between men and women entrepreneurs. The survey data provides the conclusion that no significant difference between men and women entrepreneurs in terms of utilisation of social network. Business practitioners can be benefited from our study by carefully selecting and creating the legitimate social network in order to enhance the business performance especially for those interested to create a new business.

It seems prudent to delineate a couple of caveats in this study. First, we have failed to obtain a "truly representative" sample. Most of the sample was located in the southern region (Johor, Melaka and Negeri Sembilan) and central region (Selangor and Kuala Lumpur). Therefore, the findings cannot be generalised to the whole SMEs population across Malaysia. Further, the sectoral biases that are of concern in this study arise from the investigation concentrating SME manufacturing firms. The current study attempts to examine the social network for the following sectors; (1) food and beverages (2) wood-based product (3) rubber-based product (4) electric and electronics and (5) textiles, apparel and leather. Therefore, the results produced might differ from that of other sectors.

Perhaps future research could conduct studies across the various ethnic communities in Malaysia. It should also be analysed whether the heterogeneity of the communities imply changes in the relationship of the constructs. Another possibility is that future studies could examine on how industries differ in terms of their social network. The current study represents an analysis of the social network structure for manufacturing industries. The upcoming studies should be aimed to explore the social network for service industries. Attention should also be given to provide more comprehensive studies on the social network between the manufacturing and services industries.

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Service Atonement toward the Service Dissonance and Customer Switching

Suwignyo Rahman and Ibnu Widiyanto

Abstract—The objective of this study is to develop a model of service dissonance management. Variables that affect on the service dissonance are the failure and atonement services. Service dissonance may result in the customer switching. This study applied the Structural Equation Modeling (SEM) with AMOS as the data analysis. The sampling method used was a purposive sampling method, with Customers who ever experienced service failure as the criterion, not the Jamkesmas (health card) holders. There were 260 respondents as the sample of this study. This sample take until 2 month (July -August 2013). After examining the normality test and classical assumption, the result showed that the service failure affected on the service dissonance although it was not significantly affected. Service failure also positively affected on the service atonement. Moreover, service atonement positively affected to the service dissonance. However, service dissonance had negative and no significant effect on the costumer switching.

Index Terms—Service atonement, service failure, service dissonance, customer switching.

I. INTRODUCTION

The service failure in service which is experienced by the customers / service users may be expressed in various ways and attitudes. The negative attitude on what the customers's feel expressed by inviting, panning, and even suing our service products in the public that result on the unnecessary dissonance. The degree of failure and justice achieved may effect on the satisfaction, that lead to the repatronage aim, words from words from mouth to mouth, and the intention to complain [1]. Service dissonance experienced by customers may result in the failure of customers to switch services. the determinants of customers' decisions to switch service providers appear to vary in different countries. The presence and/or introduction of "competition" was (with the exception of Poland) the most frequently identified factor that determined service customer switching. Switching factors were most frequently noted in the following order competition, pricing, core service failure, response to failed service, failed service encounter, inconvenience, and ethical problems [2]. That is why the service failure in service should be took into account and handled appropriately so that the dissonance happened can be well-controlled and have no bad impact on the product/service produced. It needs a service atonement towards service failure on the product/service produced by the service provider.

Prita Mulya Sari's case who did a Negative Word of Mouth on withholding her child's Laboratory Diagnostic Result by Omni International Hospital by texting on the miling list group some times ago was an example of yet or not fully service failure in service [3]. Service failure in service which is not well-managed by the service provider resulting the dissonance and will harm the service provider's image. It caused The Omni International Hospital got a lot of sneers because of giving a negative respond to the Prita Mulya Sari's demand. The Omni Internasional Hospital's negative response by reporting Prita Mulya Sari's action as a crime based on the ITE Act had made million people gave the hospital a louder sneer through the social media on facebook and twiter. Omni International Hospital felt they had power to stop and give Prita Mulya Sari a lesson, but this action even more harming the Omni International Hospital Image. Among politicians in Indonesian Legislative Assembly, government officials, religious leaders, and communities are sympathetic to Prita Mulya Sari.

This case indicate that the effect of service failure can occur everywhere either on the Hospital held by the public or government. The number of inpatients who do inpatient services and other services in the hospital held by the public or Indonesian government are very large in number.

Some studies showed that the theoretical debate of the research result on the relationship between the service failure in service towards the dissatisfaction showed on service dissonance. This discussion showed that the relationship between service failure in service and the level of dissatisfaction shown in the service dissonance was still debatable by some researchers. On this study, therefore, it attempts to get a clear relationship between the service failure in service and the level of dissatisfaction shown in the service dissonance was still attempts to get a clear relationship between the service failure in service and the level of dissatisfaction shown in the service dissonance which can cause costumer switching.

The phenomena discussed above can be seen from some point of views that, on the one hand, some believe that service failure will affect on customer switching. This thing matches with the research finding [2] which state that core service failure can lead to the service switching behaviour and then dissatisfaction, negative word of mouth and search new service. On the other hand, some state that service failure does not always affect to service dissonance and customer switching. This statement is in line with research finding [4] which state that on the majority of respondents still feel satisfied even enjoy greater satisfaction despite the filure of service providers to make effort for the recovery. This means that the quality of service received by customers is good or bad one through customer service failures do not result in the switch. From the arguments above, we can conclude that there are differences in opinion on the influence of customer switching after a service failure.

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This study conducted based on the theoretical contradiction problems of the research result about the service failure in service after failure service that may cause service dissonance and customer switching which is abstracted in the research gap above. This study is different from the research conducted before, because it will explain the elements of service atonement on the service failure in service after service failure that resulting the service dissonance and may cause the costumer switching. Therefore, the research problem stated in this study is: *How does the service atonement in service after service failure that resulting service dissonance and prevent the costumer switching*?

The purpose of this study is to build a model of service atonement management in reducing the service dissonance in service after failure service that may result in customer switching. The result of this study is expected to provide a variety of contibutions that is not only in the science development for academics, but also in the operational contibutions for practitioners.

II. HYPOTHESIS OF SERVICE FAILURE DEVELOPMENT

The result of study [5] shows that support the hypothesis The greater the customers' perception that a service failure is due to lack of preferential treatment, the greater their dissatisfaction after the service failure. The main aim of the current research was to determine whether or not lack of preferential treatment (perceived as a cause of the failure) has a positive impact on dissatisfaction following a service failure, after accounting for the effects of stability and controllability attributions. Attribution of controllability after a service failure has a positive impact on customers' dissatisfaction after the service failure. The intensity of negative emotions experienced after a service failure has a positive impact on customers' dissatisfaction after the service failure. The intensity of negative emotions mediates the effect of perception of lack of preferential treatmen and attribution of controllability, on customers' dissatisfaction after the failure.

Another study [6] finding that an Internet user's encounter with a service failure did not influence his/her attribution for failure. The findings show that respondents' subjective views of their previous encounters with a service incident have no significant effect on their attribution of assigning blame for the service failure. This shows that the fact that a customer has a service problem in the past might not affect how the customer assigns blame in other service situations. It is possible that other factors are involved in how customers assign blame to the service providers, the service process, technology, themselves, and/or a combination. Based on the explanation above, the hypothesis of problem formulated in the other part as follows: H1 = Service failure in service affects on the service dissonance.

III. HYPOTHESIS OF SERVICE ATONOMENT DEVELOPMENT

This service atonement becomes the efforts of compensation, penance, and link to connect the relationship

between service provider and customer can be well-established and customer does not move to other providers. Based on the research [5] can be concluded that while the length of the relationship can be used to evaluate the effect of service failure between the US passenger and the airlines and their willingness to recommend the airlines, the effect of failure service on the South African passenger needed to be more considered by taking the passangers' satisfaction rate in line with the airlines's atonement service.

Results other studies that found that the service atonement can influence the consumers' satisfaction stronger to the consumers with a high complaint/attitude toward complaining (ATC) showed the role of ATC moderation [1]. This research conducted a study that aimed to investigate, in the context of service failure and its atonement, how the customer's satisfaction is influenced by the degree of problem and company's respond, how the satisfaction affects to the repatronage intention from mouth to mouth and the complaint intention, and how the consumer's behavior towards the moderation of complaint relationship. Based on the description above, the hypothesis of problem formulated in the other part as follows: H2 = Service Failure can affect on the service atonement.

IV. HYPOTHESIS OF SERVICE DISSONANCE DEVELOPMENT

The dissonance of service failure becomes a problem if there is no effort to do the service atonement as described above. Based on the results of the study [7] showed that the cognitive dissonance theory proposes when a person holds two psychologically inconsistent cognitions (ideas and beliefs), the dissonance appears. The service dissonance can be handled quickly and appropriately if there is a quick atonement done by the service provider. Understanding the dissonance of the service failure is very relevant in this research. This study [7] conducted a study which presents the progress of the cognitive dissonance theory history.

Another study [8] stated that the atonement strategy offset the negative impact of negative emotion (dissonance) on the customers' satisfaction and the compensation strategy is more efficient if it is offered quickly. Based on the description above, the hypothesis of the problem formulated in the other part as follows: H3 = Service Atonement can affect on the service dissonance.

V. HIPOTHESIS OF CUSTOMER SWITCHING DEVELOPMENT

There is a positive relationship between unfavorable good service quality and customers switching banks [9]. The primary objective of this study is to identify the factors that influence customers switching and determine the most important and least important factor that influence customers switching behavior. And then, another study [10] found out that the quality of the offered banking products and services in combination with the bank's brand name have a positive effect in the decrease of switching behaviour while demographical characteristics, such as gender and educational level have a limited impact.

In other side, cognitive dissonance can influence customer

switching. The willingness of a dissonant individual to accept the new cognition increases with the elapse of time from the time of occurrence of the cognitive dissonance [11]. The study also unveils that, for a typical purchase, the degree of cognitive dissonance felt by more involved purchasers is less than that felt by less involved purchasers.

This finding is reinforced by the result of research which state that the research finding on Perceived service quality indirect effect on switching intention but satisfaction emerged as the strongest factor which influences switching barriers [12]. In this research, Employees' responses to service failures, reasonable prices and core services up to expectations significantly influence switching intentions. Also, higher switching barriers, lower will be the customer switching intentions. For high switching barrier group, satisfaction loyalty link will be weak. Higher the quality, higher the satisfaction, higher will be the loyalty. Higher the quality, higher the satisfaction, weaker will be the switching intentions. Higher the quality, higher the satisfaction, higher will be the switching barrier.

Based on the description above, the hypothesis of problem formulated in the other part as follows: H3 = Service dissonance can affect the customer switching.

VI. RESEARCH DESIGN AND EMPIRICAL RESEARCH MODEL

Based on the classification, this study belongs to an explanatory research because this study intends to explain the causal relation between variables through a hypothesis testing. In this part of this research, it is explained how the Empirical Research Model is. In short, Empirical Research Model can be seen in the image below Fig. 1.

In an empirical research model, it examines how the service failure influences service dissonance. Furthermore, in reducing service dissonance, it tests the influence of service failure towards the service atonement. Then, it will also be tested if the service atonement can affect to the service dissonance. Finally, the service dissonance is tested whether it can affect the customer switching.



Fig. 1. Empirical research model.

This study applied the Structural Equation Modeling (SEM) with AMOS as the data analysis [13]. The sampling method used was a purposive sampling method, with Customers who ever experienced service failure as the criterion, not the Jamkesmas (health card) holders. There were 260 respondents as the sample of this study. This sample take until 2 month (July – August 2013). The Measurement used in this study is measurement of data interval. Each indicator measured using a scale with 10 possible answers, where the lowest respond is given a score of 1 (very Disagree) and the highest respond is given a score of 10 (Very Agree).

A. Sample Description

Based on the composition of respondents by frequency of inpatient and outpatient care shows that the number of outpatient respondents are bigger that are as many as 140 people or 53.85% compared to inpatients as many as 120 people or 46.15%.

B. The Analysis of Structural Equation Modelling (SEM)

The result of data processing for SEM full analysis model shown in the following Fig. 2.



Fig. 2. SEM full analysis model.

The feasibility test of full SEM models is summarized as the following Table I:

TABLE I: THE RESULT OF FEASIBILITY TEST OF FULL STRUCTURAL EQUATION MODEL (SEM)

	· ·	· /	
Goodness of Fit	Cut-Off Value	Result	Evaluation
Indeks		Analisis	Model
Chi-Square	Kecil	434,248	Fit
	(<210.129)		
Probability	≥0.05	0,000	Fit
-			
RMSEA	≤0.08	0,093	Fit
GFI	≥0.90	0,817	Fit
AGFI	≥0.90	0,768	Fit
CMIN/DF	≤2.00	2,616	Fit
TLI	≥0.95	0,866	Fit
CFI	≥0.95	0,883	Fit

Source : Premier data processed, 2013.

The analysis of data processing result showed that the model used is acceptable. The Significance level was 0.000 which indicated a good structural equation model. To calculate the mahalanobis distance based on the chi-square score on the degree of freedom of 25 (number of indicators) at the level of p < 0.001 is $x_2 (20, 0.001) = 45.314$ (based on distribution tables x_2). From the processed data could be concluded that the maximum Mahalanobis distance was 37.124 which was still below the maximum limit of multivariate outlier.

C. Hypothesis Testing

The test of 5 hypothesis stated in this research done based on the value of Critical Ratio (CR) of a causal relation from the SEM processing result as stated in the following Table II:

TABLE II: REGRESSION WEIGHTS: (GROUP NUMBER 1 - DEFAULT MODEL)

	Estimate	S.E.	C.R.	P Label
SA< SF	,105	,071	1,475	,140 par_10
SD <sa< th=""><th>,225</th><th>,138</th><th>1,630</th><th>,103 par_11</th></sa<>	,225	,138	1,630	,103 par_11
SD <sf< th=""><th>,009</th><th>,099</th><th>,089</th><th>,929 par_13</th></sf<>	,009	,099	,089	,929 par_13
CS <sd< th=""><th>-,066</th><th>,098</th><th>-,677</th><th>,498 par_12</th></sd<>	-,066	,098	-,677	,498 par_12

VII. DISCUSSION

The results of this study showed that all the tested hypothesis was proven, they were:

H1 = service failure in service influence service dissonance.

The estimation parameter for testing the effect of the service failure towards the service dissonance showed the positive CR value of 0.089 and with a probability of 0.929. Both values were obtained and it qualified the requirement of H1, although the probability was not smaller than 0.05, so the hypothesis 1 was accepted and H0 was unaccepted. It meant that there was a significant effect of the service failure towards service dissonance, so the hypothesis H1 was proved . In conclusion, we can conclude the dimensions of service failure towards service dissonance. This is in line with the findings of research essentially states that core service failure can lead to the service switching behaviour and then dissatisfaction, negative word of mouth and search new service [2].

H2 = service failure can influence service atonement.

The estimation parameter for testing the effect of the service failure towards the service atonement showed the positive CR value of 1.475 and with a probability of 0.140. Both values were obtained and it qualified the requirement of H1, although the probability was not smaller than 0.05, so the hypothesis 1 was accepted and H0 was unaccepted. It meant that there was a significant effect of the service failure towards service atonement, so the hypothesis H2 was proved. Then, we can conclude the dimensions of service failure towards service atonement. It matches with findings of research state that the service atonement becomes the efforts of compensation, penance, and link to connect the relationship between service provider and customer can be well-established and customer does not move to other providers [4].

H3 = service atonement can influence Service Dissonance.

The estimation parameter for testing the effect of atonement service towards the service dissonance showed the positive CR value of 1.630 and with a probability of 0.103. Both values were obtained and it qualified the requirement of H1, although the probability was not smaller than 0.05, so the hypothesis 1 was accepted and H0 was unaccepted. It meant that there was a significant effect of the atonement service towards service dissonance, so the hypothesis H3 was proved. As a conclusion, the dimensions of service atonement towards service dissonance. This is in line with the findings of research state that the atonement strategy offset the negative impact of negative emotion (dissonance) on the customers' satisfaction and the compensation strategy is more efficient if it is offered quickly [8].

H4 = Service Dissonance can not influence Customer Switching.

The estimation parameter for testing the effect of the service dissonance towards consumer switching showed the negative CR value of -0.677 and with a probability of 0.498. Both values were obtained and it did not qualify the requirement of H1, that the probability was bigger than 0.05, so the hypothesis 1 was not accepted and H0 was accepted. It meant that there was no significant effect of the service dissonance towards costumer switching, so the hypothesis H4 was not proved. Thus, we can conclude the dimensions of service dissonance had no effects towards the consumer switching. The result was in line with research [12] which state that the research finding on Perceived service quality indirect effect on switching intention. This means that the quality of service received by customers is good or bad one through customer service failures do not result in the switch. It is possible to happen because the patient that has become the customer of one hospital feel that only on that hospital the service given and not in any other hospital.

VIII. LIMITATION AND FUTURE RESEARCH

The limitations of this study occurred because of the following things:

 In sampling, there were some respondents in these three hospitals that the respondents were only a bit or never experience service dissonance or service failure. Because the hospital did not have exact data on service users who have experienced service dissonance service failure. Therefore, the writers conducted the service users with the criteria for those who only experienced service failure. The same thing would be better if in the future research has been devoted to the respondents who had experienced service failure and service dissonance.

2) In the interview with the respondents, in one of the hospital, respondents did not answer freely because there are some hospital officers, who accompanied during the interview. Therefore, for future research, the hospital should give the permission to the author to conduct the research without accompanied by the hospital officers.

The result of the study provides some managerial implication as follows:

- Hospitals should be able to manage the service failure through the service atonement optimally. Service failures are not managed properly will lead to a boomerang for the hospital, one of them is the high service dissonance and the possibility of consumer switching. Otherwise, failure service that is well-managed give good impact for the hospital.
- 2) Hospital should reduce the service failure happened in their organizations through professional services in order to avoid dissonance service which will lead to the consumers move to other hospitals.

IX. CONCLUSION

The result of the study showed that 4 hypotheses are proved, the 3 hypotheses are H1 = service failure in service influence service dissonance; H2 = service failure can influence service atonement; H3 = service atonement can influence Service Dissonance. Then, 1 hypotheses that cannot be proved is H4 = Service Dissonance cannot influence Customer Switching.

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The Development of Self- Helping Model for Poverty Alleviation on the Productive Poor Group

MG. Westri Kekalih Susilowati, Angelina Ika Rahutami, and A. Rachmad Djati Winarno

Abstract—There have been so many effort have been done to reduce poverty. The poor has decreased. However, it is still remain vulnerable. The existence of economic turmoil, such as crop failure and rising fuel prices would quickly raise up poverty. The empowerment of the poor is done uniformly and pay less attention to the character of the poor, especially their the social psychology character. High economic growth often ignores the poor and marginalized. Therefore, inclusive growth can play an important role in alleviating poverty.

This research is supposed to identify the social phycology character of the productive poor, local wisdom related to poverty reduction, as well as develop a model of self-helping program for poverty alleviation.

This study identified two groups of poor who has different social psychology character. The first group is the group of the poor who tend to accept poverty as destiny. This group considers that education is not important and subsistence work. This group tend to be found in rural which has low levels of mobility, and the people tend to be homogeneous. Secondly, the groups of poor who believe that poverty can be changed. They argue that the key factor to get out of poverty is education. Most of them set aside part of their income to live better in the future. This group tend to be found in urban which has high levels of mobility, and people are more likely heterogeneous

Index Terms—Empowerment, inclusive growth, productive poor, poverty alleviation, social phsycology.

I. INTRODUCTION

Poverty is one of the problems faced by provinces in Indonesia, including Central Java. According to Indonesian Statistic's data, the number of poor in Central Java in March 2011 amounted 5,107 million people (15.76 percent to total population), much less than in March 2010. The poor in Central Java has decreased, however it is still remain vulnerable. The existence of economic turmoil, such as crop failure and rising fuel prices would quickly raise up poverty.

The high growth of economy sometimes ignoring the poor and marginalized people. Therefore, high growth of economy sometimes resulting an increase in inequality [1]. The Increasing in inequality may have implications such as a raising in the rate of poverty, political instability and social instability as well as lower growth itself. Then, Central Java implements pro-poor, pro-jobs and pro-growth to address poverty. When the inequalities occur, it could mean that development does not in line with the concept of inclusive growth. Reference [2] shows the main source for inclusive growth and poverty alleviation is the field of productive and decent employment, social security and increasing the capability of the basic needs of the community. It is not enough to make inclusive growth materialized, if the poverty alleviation just rely on aid or granting and so do the empowerment of the poor is done uniformly. It is important to consider the characters of the poor, especially the social psychology character of the poor in order to obtain a comprehensive model of poverty alleviation.

II. LITERATURE REVIEW

A. Poverty and Poverty Alleviation Program

The definition of poverty refers to a condition of helplessness in meeting the needs. Poverty is a multidimensional problem. Based on the literature, there are several definitions of poverty, among others are:

- Absolute poverty; absolute poverty refers to definition that the poor are those whose income is below the poverty line. Common measure used is the size according to the World Bank, the U.S. \$ 1 per day and U.S. \$ 2 per day.
- Relative poverty; poverty refers to the condition of the distribution of income in society. Thus, the poor are always present in the life
- 3) Structural poverty; structural poverty refers to poverty caused by the structure or governance of community life.
- 4) Cultural poverty, cultural poverty is the poverty is caused by factors such as customs and culture (local culture).

Poverty is a problem that exist from earlier times. The government has made various efforts to reduce poverty. Some of the efforts made by the government are poverty alleviation program sponsored by the World Bank at the sub-district and urban poor, Kredit Usaha Tani/KUT (Credit for Famer), beras untuk orang miskin/ RASKIN (rice for the poor), Jaring Pengaman Sosial/JPS (the social safety net), Kartu GAKIN (poor family card), education for poor students, Kredit Usaha Rakyat/KUR (the People's Business Credit), P2KP, Bantuan Langsung Tunai/BLT (direct cash assistance), Program Nasional Pemberdayaan Masyarakat Mandiri/PNPM Mandiri (National Program for Community Empowerment) and so forth.

It is seemed that poverty rate does not change. This

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condition does not reflect that government has failed to reduce poverty. However, there is one thing that can be examined in the poverty alleviation programs. Poverty alleviation programs have tended to put "the poor" as objects. There are some weaknesses in the poverty alleviation program [3], those are: (1) tend to be oriented on economic aspects, yet multidimensional, (2) charity nuanced (generosity) and not productivity nuance, (3) the poor becomes object instead of the subject, (4) the position of the government as an authority rather than a facilitator. Reference [4] expressed the need for a new paradigm in the alleviation of poverty, which emphasizes "what is owned by the poor" instead of "what is not owned by the poor".

B. Inclusive Growth

In order to achieve the highest economic growth, some issues of income distribution sometimes be ignored. As a result, the income gap in society become wider. There is a group of people who are not able to access process and outcomes of development. Hence, development planning should pay attention to the problems of poverty, including the distribution of income in society. The high growth of economic and poverty are inseparable.

Inclusive growth is the growth for all. This concept refers to a sustainable economic. In this concept, the result of development can be enjoyed by or distributed to all segments of society, including the poor and marginalized, either now or future. Thus, there are two main points in inclusive growth, (1) Inclusion (participation), which means that there is a diffusion of opportunities for all. Inclusion growth also provides opportunities to those excluded in the current growth, and (2) sustainable growth, which means that the process of growth does not stop. The growth of the economy occurring now to the future.

Inclusive growth is an effective strategy for reducing poverty due to poverty alleviation which is based only on absolute income sometimes ignore some issues of inequality and risks. Instead, inclusive growth strategy focused on creating opportunities and ensuring equal access. Equal access to opportunity can be a basic instrument to increase human capacity, including the poor which has workforce as a major asset. In general, the focus on inclusive growth is the process improvement of the opportunities that will be effective to reduce poverty, and inequality.

C. Productive Poor

President Susilo Bambang Yudhoyono issued Presidential Decree No. 15 Year 2010 on the Acceleration of Poverty Alleviation. The main purpose of the regulation is to reduce poverty rate to 8-10 percent by the end of 2014. It is mentioned "productive poor" term in this Presidential Decree. "Productive poor" is defined as poor families who have no source of income and neither ability to meet basic needs or people who have a source of livelihood, but can not meet basic needs for decent humanity. Productive poor is also defined as the poor families who have a decline in income and welfare or having income discontinuation. Based on the age grouping, productive poor are poor people aged 15-55 years. This group is then used as a focus of productive poor poverty alleviation.

D. The Culture and Poor

Society can not be separated from culture consciously or not influential in their thinking and behavior [5]. Poor people who live in rural areas could have been influenced by the character of rural communities as well as a close relationship and a strong bond strict social control, mutual assistance, and the pattern of a simpler life. Similarly, the heterogeneous character of the city and do not put close relationships and the existence of a higher tolerance will affect the lives of the urban poor [6].

An expert of Social learning theory, Albert Bandura, argued that human behavior can not be separated from the influence of the individual and the environment [7]. In these cases, the relationship between the environment, the individual, and their behavior is reciprocal (mutual). This theory assumed that the individual productive economic activities can not be separated from the environment in which the individual lives and personal characteristics of the individual concerned. This means that these three elements, namely environmental, individual, and behavior interplay. Environment, both social and physical, provide a variety of possibilities and limitations for individuals to behave. Such behavior is in turn also affects the individual concerned and the environment in which he lives.

E. Motivation and Self-Efficacy

Condition of a person who is perceived as lacking by the person will lead to the need. This is called by Maslow as deficiency needs. Deficiency needs include the needs for survival, safety, love, belongingness, and esteem. Another being need is the need for self-actualization, the need to "be". Human needs are hierarchical. People would meet the needs from the most basic needs, namely the need to survive (survival). Survival needs is physiological. Hence, it can be said that the poor people struggling more to meet this basic needs.

The needs of the individual bring impetus to undertake activities to meet those needs. It's called motivation. Motivation is the drive that makes people behave in a certain way. It could be mean that the behavior of the poor to overcome poverty is also is also not be separated from motivation. Various studies have shown that a strong motivation will affect the performance and achievements of businesses and individuals as well as groups [8].

In attempting to come out from conditions that are less (which raises the need for) Individuals often face a variety of constraints, both from inside and outside individual. Constraints from the individual include the ability to and willingness of the individual and other individual factors. Constraints also come from outside himself, including from their own group. This is called the motivational gravity [9]. Motivational refers to how strong the gravity of environment supports or inhibits individual members of the group to transform itself and thus stands out compared to the other member in group. Motivational gravity can be derived from each other (peer) or superiors. Poor peer are all the poor all member of the poor community itself. Community leaders and people who are socio-economically better able to function as leader. Motivational gravity will affect the success of the business and who tried to come out from the current condition.

Bandura [10] introduced what he called self-efficacy, i.e., the individual's perception of his ability to behave in a certain way in a particular situation. Self-efficacy plays a role in some specific behavior, both in health and social relations. Self-efficacy plays a role in the various stages of a person's behavior, began from the emergence of the idea, behavior planning to the actual behavior as well as the recovery process when there is a failure in behavior. In conjunction to the effort of the poor, the behavior means the concrete behavior to come out from the poor conditions endured today. The extent to which people will seek also depends on how people see themselves, whether he is capable or not capable to come out from the poor condition.

III. RESEARCH METHOD

A. Research Objectives

The problem of poverty is multi-dimensional so it is not quite solved simply by granting subsidies or cash assistance to the poor. One of the best ways to come out of poverty is the empowerment of self. Therefore, the general purpose of this research is to develop a model of self-empowerment or self-helping program to come out of poverty.

B. Beneficiaries

This research has some beneficial as follows:

- 1) The overall study is expected to contribute in improving the welfare of the community, particularly through the expansion of equal opportunity for all people to take a part in and enjoy the result of development, especially for the poor and marginalized people.
- 2) Donor: This study is expected to be a reference to address the poverty alleviation.
- 3) Government: This study is expected to be a guidelines in formulating policies to address the poverty alleviation.
- 4) Academicians: This study is expected to enrich reference and knowledge that concern with poverty alleviation.

C. Sample and Population

This research is designed as exploratory research. This research aim to map the multidimensional character of the poor as well as the nature of poverty. The main character that will be explored are the potencies of the poor as a basis for developing a model that empowers the group itself. This research is multidimensional because it will explore some of positives character, the economic potential of the poor, local wisdom which includes economic, socio-cultural and ecological.

The research was conducted in Wonosobo and Klaten regency which are pockets of poverty in Central Java. Determination of the regencies are also based on the poverty gap index and poverty severity index. Wonosobo and Klaten regency are regencies that has the highest poverty gap index and poverty severity index in Central Java. While the respondents in this study will be taken by convenience sampling technique

D. Data

In order to achieve the research objectives well, in this study used both primary and secondary data. Primary data

include positive characters, potential of economic, cultural (customs), expectation, local wisdom and the role of government. The main source of primary data is poor groups. While the secondary data includes data associated with poverty such as growth poverty, poverty gap index, poverty severity index as well as the various programs and policies of poverty alleviation.

In order to obtain the required data, this study used some data collecting technique, that is:

- 1) Documentation. This method is used to map the current conditions of poverty, projections and identify the various programs that have been undertaken by the government to reduce poverty.
- 2) Interviews (face to face interview). Interviews is used to obtain data from the primary target group of the positive characters, economic potency, cultural (customs), local wisdom as well as their expectations
- Focus Group Discussion (FGD). FGD aims to conduct synchronization the various opinions of various related parties in poverty alleviation efforts such as community leaders, academia and government

E. Analysis Technique

This study uses analysis techniques qualitatively as well as quantitatively and includes several stages. The stages of research are as follows:

- 1) Conduct a preliminary study to map out the general conditions poor groups in Central Java, especially in the two selected districts.
- 2) Identify positive characteristics, economic potential and local wisdom in productive poor communities.
- 3) Model development. On the basis of the field studies and supported by theory of social psychology and economics, alternatives model of productive poor community empowerment are developed. Empowerment model that will be developed is self-helping model. A model that is expected to encourage the people by themselves and their own strength trying to come out of the shackles of poverty..

IV. THE RESULT AND DISCUSSION

A. Demographics Character of the Productive Poor in Klaten and Wonosobo Regency

The following exposure presenting the demographics character of the productive poor groups in Wonosobo and Klaten Regency. Wonosobo Regency representing the productive poor in the rural areas. While Klaten Regency representing the productive poor in urban areas.

Most of the respondents has education up to elementary school (Sekolah Dasar/SD). In Klaten Regency, the number of respondents who passed the elementary school and below is 74.00 percent. Meanwhile, in Wonosobo Regency is 88.00 percent. Based on marital status, the majority of respondents are married and the head of household. This research also found that most of respondents have dependents from two to four people. Related to assurance issues, it is known that almost all respondents have health insurance (Assurance/JAMKESMAS). Usually, there are just one person who works for a living in a family.

Most respondents in Klaten have a job working alone status. Meanwhile, in Wonosobo regency is working alone and as a laborer. This may occur due to differences in economic structure. The Areas of research in Wonosobo Regency is the rural livelihoods where the most of the population are farmers. Meanwhile, the economic structure of Klaten Regency tends to trade. Comparing the amount of income to expenditure, this study shows that the average amount of expenditure equal relatively to the amount of income. The average of income and expenditure either in Klaten Regency and Wonosobo is Rp450.000, 00 to Rp493.000, 00 per month. Most of these families have experienced the condition in which the expenditure is greater than income. This budget shortfall is usually covered with the debt or asked for help from family that are considered capable.

B. The Social Psychology Character of Poor

One of the most important factors in the planning of poverty alleviation programs is knowing how the poor look at the poverty itself. This study reveals some issues related to the perspective of the poor to their poor conditions. The poor's perspective to their poor condition reflects their "social psychology" character. The Perspective on poverty in this study are detailed into some items such as how to measures of poverty, why are they poor? What will they do to come out of poverty? What programs are expected to come out of poverty? The following section describes the perspective of the poor to the detail items.

The majority of informants in the FGDs in both regency feel poor because their income does not meet the needs. Measurement of poverty is also based on the condition of building of the house. They feel poor because their houses are small, ugly and doesn't made of brick. They also feel poor because they do not have a steady job that can be a source of a regular income. Inability to pursue higher education or to send their children well also becomes ones among the reasons feel poor. In Wonosobo regency where the study area is the rural, they feel poor because they have just a small land for farming, or even have no rice fields and only a laborer.

There are many factors that are identified as the cause of someone to be poor. Those are:

1) Education factors

The main factors of poverty that was identified in this study is education factors. All informants presuppose that if he had the chance to get a higher education then surely the situation would be better, or not poor. Therefore, some of informants who already married and have kids try to send their children to go to school as high as possible.

2) Cultural factors

Cultural factors influence the emergence of poverty. In this study, there is a respondent who shared his experiences about the condition of poverty. The resource person had high school, and her husband is an undergraduate. In the beginning, her husband was working as a lecturer in Jakarta and Kalimantan (still honoree). However, eventually the opportunity to become a lecturer cannot be taken because his parents forbade him to go wander. The concept of "mangan ra mangan kumpul" / (weather eating or not, always together),

still held by his parents. Because of it is forbidden by his parents, he started to open motorcycles repair business.

3) Destiny factors

Factors destiny as one of the causes of poverty implied in some of the statements as follows:

- "....bagaimana ya?....bagi saya seperti sudah digariskan oleh Yang di atas (Tuhan)...., saya dulu punya usaha salon, tetapi kena gempa....., sekarang mau buka lagi belum punya modal....ya jadi miskin begini..." (".... How?...... for me, as was determined by the Its in the top (God) I have ever barber shop, but destroyed by an earthquake, now, I want to start again but do not have the capital yet now, I am poor ... ")
- 2) "...menjadi miskin....ada faktor takdir....., sudah berusaha tapi ada-ada saja.....warungnya hancur lebur karena gempa..... " ("... To be poor? my destiny, I have tried to come out but there is always a nuisance my stall were completely destroyed by the earthquake ")
- 3) ".....la pripun, sampun digariskan nggih dilakoni mawon....(mau apa lagi, sudah ditakdirkan ya dijalani saja.....)".(What can I do?, to be the poor is my destiny, simply be lived......

4) Behavioral factors

There is one resource persons who admitted that he was poor was the result of consumptive behaviors. Previously, he was a shoe seller. He ran out of capital, because of his consumption behavior. He did not separate business finances to his private wealth. The resluts of shoe sales is used for consumption, especially cigarettes. In the end, the capital was eroded and depleted for consumption.

There are significant differences between the perspectives of the poor to the causes of poverty. Poor people in Klaten Regency stating that the main cause of poverty is the educational factor. Meanwhile, in Wonosobo Regency the poor tend to accept the poor conditions as destiny.

Perspective on poverty affects the ideals or the action plans and also his desire to strive out of the poor situation.

TABLE I: THE TYPES OF EFFORT TO COME OUT OF POVERTY (%)				
Effort Types	Klaten Regency	Wonosobo Regency		
Switch to a better job	11,63	18,18		
Looking for a Debt/finding financial aid	37,21	57,58		
or working capital				
start a business	39,53	30,30		
Pursuing at least one of the family	16,28	6,06		
member in higher education				
Others	16,28	15,15		

Source: primary data, processed.

Starting a business and find financial aid to come out of the poor has been done by the majority of the poor in Regency Klaten and Wonosobo. Concerning with the efforts to come out of poverty by striving for at least one of the family member in higher education is mostly done by the poor in Klaten. It is in line with their thoughts about causes of poverty. The poor in Klaten Regency tend to see that the main cause of poverty is the educational factor. Meanwhile, the poor in Wonosobo regency tend to see that poverty is destiny (Table I). Starting a business and find financial aid to come out of the poor has been done by the majority of the poor in Regency Klaten and Wonosobo. Concerning with the efforts to come out of poverty by striving for at least one of the family member in higher education is mostly done by the poor in Klaten. It is in line with their thoughts about causes of poverty. The poor in Klaten Regency tend to see that the main cause of poverty is the educational factor. Meanwhile, the poor in Wonosobo regency tend to see that poverty is destiny.

Differences in the character of poverty can also be seen from the kinds of programs / assistance expected by the poor. The majority (60.87 percent) of respondents on the poor in Klaten expect productive programs/assistance such as working capital, tuition assistance or educational aid, and health aid. Respondents in Wonosobo regency tend to expect consumer goods such as food and house. As mentioned earlier, this study starts from the typology distinction as one of the factors that may cause differences in the character of poverty. This study proved that there are differences in the character of poverty. Nevertheless, this study would not generalize it into rural and urban poor character. Because, the perspective on a particular thing including poverty is affected by many factors such as culture, environment, accessibility region, the intensity of social interaction between the residents and with the community outside, historical background and so forth.

This study found two character of poverty, those are the poor people who are resigned to poverty (group A) and the poor people who want a better/prosperous life (group B). In detail, the group "A" has the properties:

- Accept poverty as the destiny,
- Tend to be apathetic,
- Less conscious of education.
- The Intensity of social interaction with the outside community is relatively low,
- Has a relatively homogeneous community (among others in terms of education level, economic status, livelihood, culture,
- Live in neighbourhoods with the public facilities and social facilities inadequate/limited,
- Facilities and infrastructure for mobility are relatively low, and
- Working for mere survival (subsistence).
- Detail of group "B" properties are:
- Argues that poverty is not the destiny, so it can be changed,
- Have confidence and eager for a better life,
- Conscious to education, education is the key out of poverty,
- Intensity of social interaction with the outside community is relatively high,
- Heterogeneous communities tend to have (among others in terms education level, economic status, livelihood, culture),
- Live in a neighbourhood with the general and social facilities are adequate,
- Facilities and infrastructure for mobility are relatively high.
- Allocate part of their income in order to live better in the future (saving up to raise capital, the budget allocated for

education)

C. Local Wisdom of Poverty Alleviation

This study did not find any local wisdom that is directly related to the problems of poverty in Wonosobo Regency. However, like other Javanese, community in Wonosobo Regency has local knowledge "gotong royong" (mutual cooperation) and adherence to community leaders, especially religious leaders. Therefore, in designing poverty alleviation programs need to consider both the local wisdom.

In Klaten regency were found several local wisdom such as:

- 1) The awareness the rich to the poor relatives. The rich usually give relief to the poor to send their children for example.
- 2) "Ngenger", i.e., poor people entrust their children to the rich. There are two types of "ngenger". First, poor families entrust their children to the rich without the child should help with household work. Second, poor families entrust their children to the rich, doing household work, unpaid but schooled.
- 3) Institutionally, in the mosque or church has a special account to hold funds from the social community that is able to be distributed to the poor in the form of school aid or financial aid. In the church named "Tabungan Cinta Kasih" (love savings).

D. The Development of Self-Helping Model Accordance to the Social Phsycological Character of the Poor

Self-helping model can be interpreted as a model that emphasizes the role of individuals or communities to help or develop themselves by harnessing all the potential uses of the communities themselves or those around him. In a self-helping model, individuals or society has a major role in the development of themselves, without leaving cooperation to the other parties. To develop this model need a deeper understanding of the community itself.

This research was conducted on the "productive poor" at two locations that have different typology characteristic. Klaten Regency is a sample of the urban poor, while Wonosobo is the rural poor. As part of a community of a city (even though a small town) Klaten communities have more access to some facilities such as education, transportation, various forms of economic activity, health, and so forth than Wonosobo.

As described in the previous section, people with low education (Elementary School or lower) in Klaten Regency is not as much as Wonosobo. The magnitude access to education also allows people in Klaten to pursue a higher education than Wonosobo. It also indirectly influences the way of thinking about the importance of education. An adequate transportation facilities in terms of roads and other means of transportation (vehicle) allows people in Klaten have higher mobility than people in Wonosobo. This high mobility, in turn, allows for greater interaction to the more people as well as an opportunity for economic development efforts. Job availability also varied more in urban areas (Klaten) than in rural (Wonosobo). Wonosobo regency is the mountain slopes region. Most of the population lives from agriculture, either as farmer's owners, tenants, and farm labourers. Thus the jobs available are also more related to agriculture. Traditional agricultural activities, especially as farm labourers, particularly technical skills and physical demands, without ignoring the aspect of knowledge.

V. COCLUSSION

This study increasingly asserted the existence of differences in the social psychology character of the poor that is caused by differences in the natural environment, culture, social interaction, history, and a few other things. There are the poor who live in Therefore, in formulating poverty alleviation programs should be tailored to the main characters in each group.

Poverty alleviation program for the poor that have main characteristics accepting poverty as destiny, apathetic, less conscious education, and working for mere survival (subsistence); the program should be a program that is supposed to encourage a change of mind-set or paradigm of a more prosperous life, the need for self-development through education and that being poor is not destiny but can be changed. For the poor who believe that the poor condition can be changed (not destiny), eager for a better life, conscious education, and allocate some of its earnings for a better life (through education or capital accumulation), the program should be a program that is supposed to enhance the knowledge and ability of the poor to harness his potential and existing social capital

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Can a Country be Exempted from Impossible Trinity: Evidence from Malaysia

Soo Khoon Goh

Abstract—This paper examines monetary independence during the period when Malaysia had a fixed exchange rate and an open capital account regime. The objective is to assess the relevance of the Impossible Trinity for policy. The evidence of cointegration between the Malaysian and US interest rates during this period, suggests that there is no monetary independence in the long run. However, our results show there is: Malaysia retains some monetary autonomy in the short run. The loss of long-run monetary autonomy under peg/open capital was in line with the trinity, and may be one reason the peg was eventually abandoned for managed floating in July 2005.

Index Terms—Impossible trinity, Malaysia.

I. INTRODUCTION

The impossible trinity postulates that it is impossible to have a fixed exchange rate regime, an open capital account and an independent monetary policy simultaneously. A country can choose only two of these goals, but not all of them simultaneously. If a country chooses a fixed exchange rate and an open capital account, it means it has to forgo an independent monetary policy. In other words, the cost of maintaining a fixed exchange rate and an open capital account is a loss of control over the domestic monetary policy, as domestic interest rates will be correlated with the pegged country rates. This hypothesis has been widely taught and recognized since it is quite intuitive and helpful to understand the constraints policy makers must face in an open economy setting.

Empirical examination of the nature of these tradeoffs is not abundant. Ohanian and Stockman [1] showed that there can be in fact some room for an independent monetary policy in the short run under a fixed exchange rate regime. Svensson [2] found similar evidence of short-term monetary independence within the EMS. Lim and Goh [3] tested for monetary independence in Malaysia by estimating the capital account offset and sterilization coefficients. Their results are consistent with [1] in that the Malaysian central bank possesses some short-run control over monetary policy even during the fixed exchange rate regime. This is in sharp contrast to the impossible trinity's argument, which states that a country will lose all its monetary independence under fixed exchange rates and free capital mobility.

The objective of this paper is to test the trilemma predictions using a small, emerging market, that is, Malaysia

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in the 2000s. During the Asian Currency Crisis, Malaysia pegged its ringgit to the US dollar and imposed capital controls in Sept, 1998. By May, 2001, Malaysia lifted its capital controls but kept the peg before it removed the peg in July 2005. During this period, the trilemma would predict that Malaysia would have no choice but to give up its monetary autonomy, i.e. allow its interest rates to move closely with the US rates. We aim to examine the correlation between the Malaysian and US interest rates during this period, by using cointegration techniques. The hypothesis is that if the trinity holds, there should be no monetary policy autonomy in Malaysia, when Malaysia has a fixed exchange rate and an open capital account. Interest rates in Malaysia should move closely with the interest rates in US, in order to maintain the pegged exchange rate. Hence, we should find evidence of cointegration between Malaysian and US interest rates from May 2001 till June 2005.

Thus far, there has only been one econometric study of the effects of the trilemma on Malaysia's monetary policy in this period. Lim and Goh [3] tested for monetary independence but not interest rate independence by estimating capital account offset and sterilization coefficients. Their results suggest that even though BNM had some monetary control in the short run, it, however, lost its long-run monetary control during the peg/open capital period, and only re-captured control when it switched to managed floating¹. Our study will differ from [3] in that we will use interest rate interdependence as the indicator for monetary independence. It will be interesting to see if a different indicator would suggest the same conclusions as the 2011 study; and why, if it should not.

The remainder of the paper is as follows. Section 2 deals with the theoretical framework and empirical methodology used in this paper. Section 3 reports and discusses the test results. The main conclusions and policy implications can be found in the last section.

II. THE MODEL AND THE METHODOLOGY

We illustrate the underlying monetary independence hypothesis using the uncovered interest parity condition (UIP). The UIP is expressed as:

$$i_t - i_t^* = E(s_{t+1} - s_t) + \rho \tag{1}$$

where *i* is the nominal interest rate, i^* is the base country interest rate², *s* is the exchange rate, *E* is the expectation

¹ For the period prior to the Asian Currency Crisis (managed floating), Takagawa[4] and Umezaki [5] also found that Malaysia enjoyed some degree of monetary independence.

² The base country is the economy in which a country is pegged.

operator, ρ is the risk premium and *t* is the time operator.

Under a fixed exchange rate regime, s_t is constant. In a fully credible peg, we would expect that $E(s_{t+1})$ remain the same, hence, the third term can be dropped as zero. Similarly, in the absence of any risk premium, ρ is expected to be zero.

Hence, for a credible peg under open capital account, the domestic interest rates are expected to move one-for-one with the base country interest rates, that is:

$$\Delta i_t = \Delta i_t^* \tag{2}$$

In other words, there is a loss of monetary autonomy under a fixed exchange rate and an open capital regime.

Under a floating exchange rate regime, the domestic and base country interest rates are independent and only the spot exchange rate (*e*) adjusts to satisfy the UIP condition. The expected change in exchange rate is equal to interest rate differential and the risk premium, ρ .

$$E(s_{t+1} - s_t) = i_t - i_t^* - \rho$$
(3)

This suggests that economies having floating exchange rate regimes experience less correlations between domestic and base country interest rate changes, and hence, have more monetary autonomy than do economies with fixed exchange rate regimes. If domestic monetary policy is independent of monetary policy in the base country, we would expect no cointegrating relationship between the interest rates. If the domestic interest rate follows tightly the movements in the base country's interest rate, then the domestic monetary policy is likely to be dependent on the base country's monetary policy; and we would expect a strong cointegrating relationship between the two interest rates. Nevertheless, our cointegration test implicitly imposes a conditional relationship between the US and Malaysian interest rate, i.e. for a small country like Malaysia, the interest rate does not Granger-cause the US interest rate. In other words, we are establishing cointegration with weak exogeneity of the Malaysian interest rate.

Prior to the cointegration test, we would conduct unit root tests to determine whether the variables are non-stationary (i.e. have unit roots). If all the variables studied are I (1) non-stationary, we would proceed to the Johansen maximum likelihood method [6]-[8] to test whether these variables are cointegrated. The Johansen approach allows the testing of the long-run relationship between the variables in a multivariate framework, and requires that all the variables be of equal degree of integration to yield estimators which are super-consistent.

III. DATA DESCRIPTION AND EMPIRICAL RESULTS

We used the Malaysian interbank overnight and US Federal Fund rates as an indication of policy rate to examine whether interest rates in Malaysia are forced to follow a relationship with US interest rates, or whether some deviation is possible.

The US interest rate data were extracted from the Board of Governors of the Federal Reserve System, Economic Research and data website while the Malaysian interbank rates were extracted from Bank Negara Malaysia, Monthly Statistics Bulletin.

Unit root testing using the Augmented Dickey-Fuller (ADF) test, Phillips-Perron (PP) test and Augmented Dickey-Fuller Generalised Least Square (ADF-GLS) were carried out and are reported in Table I. All of these unit root tests were used to test whether the data contains unit root (non-stationary) or is a stationary process. All the tests cannot reject the null hypothesis of a unit root in levels, but are stationary after first differencing, implying that the variables under investigation are non-stationary at all levels.

TABLE I: UNIT ROOT TESTS					
Panel 1 : Augmented Dickey	Panel 1 : Augmented Dickey Fuller (ADF) and Phillips Perron Test(PP)				
	2001:1-2005:6				
	MI	USI			
		ADF			
Level	-2.23(3)	-2.13(1)			
1 st Difference	-8.05*(0)	-2.90*(4)			
		PP			
Level	-2.12(3)	-2.06(0)			
1 st Difference	-14.17*(2)	-3.05*(7)			
Panel 2 :					
Augmented Dickey	y Fuller – Generaliz	ed Least Square (ADF-GLS)			
	2	001:1-2005:6			
	MI	USI			
		Test-stat			
Level	-2.23 (3)	-0.57(1)			
1st Difference	-4.15* (3)	-2.78*(2)			
		95% BCV			
Level	-2.36	-2.25			
1 st Difference	-2.19	-2.24			

Note: * denotes the significant rejection of unit root. Sub-sample consists of 92, 55 and 89 observations respectively. The ADF and the ADF_GLS include an intercept but not a trend. The 95% BCV are bootstrapped critical values by stochastic simulations using 1000 replications. The parenthesis in both tests refers to the optimal lags which were determined using Schwarz Bayesian Criterion. For fixing the truncated lag in PP test, the spectral estimation method selected is Bartlett kernel and for Bandwidth the Newey-West method. The optimal lag for ADF and ADF-GLS tests is selected based on the SIC criteria. The lag parameter was chosen to eliminate serial correlation in the estimated residuals.

However, the unit root test is notorious for its inability to reject the null hypothesis of unit root when there is a structural break in the variable [9]. In other words, for the series that are found to be nonstationary, there may be a possibility that they are in fact stationary around the structural break(s). Though our data span is not long, we cannot rule out the fact that there is some economic shock which causes a structural break in the interest rate data. If it is certain that the underlying series are all I(1), the conventional Johansen cointegration techniques can be safely used. Thus, we opted to examine the unit root test which takes into account the endogenous structural breaks such as the Zivot-Andrew test.

We proceeded with three models to test for a unit root: (1) model A, which permits a one-time change in the level of the series; (2) model B, which allows for a one-time change in the slope of the trend function, and (3) model C, which combines one-time changes in the level and the slope of the trend function of the series. Hence, to test for a unit root against the alternative of a one-time structural break, Zivot and Andrews use the following regression equations corresponding to the above three models.

$$\Delta Y_{t} = \mu + \alpha Y_{t-1} + \theta_{1} DU(\lambda) + \delta t + e_{1t} \quad (\text{Model A})$$

$$\Delta Y_{t} = \mu + \alpha Y_{t-1} + \theta_{1} DT(\lambda) + \delta t + e_{2t} \quad (\text{Model B})$$

$$\Delta Y_{t} = \mu + \alpha Y_{t-1} + \theta_{1} DU(\lambda) + \theta_{2} DT(\lambda) + \delta t + e_{3t} \quad (\text{Model C})$$

where DU is an indicator dummy variable for a mean shift occurring at each possible break-date (TB) while DT is the corresponding trend shift variable. The null hypothesis in all the three models is α =0, which implies that the series { Y_t } contains a unit root with a drift that excludes any structural break, while the alternative hypothesis α <0 implies that the series is a trend-stationary process with a one-time break occurring at an unknown point in time. The Zivot and Andrews method regards every point as a potential break-date (TB) and runs a regression for every possible break-date sequentially. From amongst all possible break-points (TB), the procedure selects as its choice of break-date (TB) the date which minimizes the t-statistic.

Table II shows the Zivot-Andrew unit root test which allows for a single break in the intercept, the trend and both. Table II shows that using models A, B and C, we do not reject the null of unit root for *MI* and *USI* during this period, suggesting that both series are non –stationary even after taking account of the structural break. Since we are certain that the underlying series are all I (1), the conventional Johansen cointegration techniques can be safely used.

TABLE II: ZIVOT-ANDREW TEST

	2001m5: 2005m6				
	Variable: Mi	Variable: USI			
Model A (intercep	pt)				
Κ	3	1			
min t	-4.52	-3.37			
ТВ	2002M06	2004m07			
Model B (Trend)					
Κ	3	1			
min t	-3.16	2002m07			
ТВ	-3.71	2004m02			
Model C (intercep	ot and trend)				
Κ	3	1			
min t	-4.44	2002m06			
ТВ	-3.67	2004m02			

Note: Model A which permits a structural break takes the form of a shift in the mean, Model B is where the structural break takes the form of a shift in the trend, and Model C allows the structural break to take the form of a shift in the mean and the trend. *K* is the optimal lag length min *t* is the Zivot-Andrew test statistics which is defined as the minimum t-statistics of all the sequential *t*-tests. TB is the break date that corresponds to the minimum t statistics. Symbols *, **, *** denote significance at 10%, 5% and 1% levels respectively, using the critical values from Table II- Table IV from [10].

To implement the Johansen's cointegration test, the following VECM is estimated.

$$\Delta X_{t} = \Phi D_{t} + \sum_{i=1}^{k-1} \Gamma_{i} \Delta X_{t-i} + \Pi X_{t-1} + \varepsilon$$

where Δ is the first difference operator, X_t is a vector of endogenous variables, and, D_t is the deterministic vector. The matrix π contains information about the long run relationship between X_t variables in the vector.

The specification of a VECM requires the selection of a lag length for the VAR, followed by the selection of the number of cointegrating vectors and the appropriate deterministic specification. The selection of the lag length for the VAR can validly be done by estimating a VAR in the levels of the time series and using the usual information criteria and residual correlograms. Given a limited sample size and following the general rule of thumb for monthly data, a maximum lag length of six is sufficient to be imposed on the VAR model. The Akaike Information Criterion (AIC) suggests four-lags or VAR (4) model. According to the AIC criterion, two lags are included in the cointegration test.

We will consider including constant terms and linear time trends in a VECM. There are two places in the VECM where deterministics can be included: in the cointegration equations or in the error correction equations. We include a dummy variable in the cointegration estimations to be consistent with the structural break – unit root test. There are two hypothesis tests used for cointegration testing, called the Trace and Maximum Eigenvalue tests. Table III reports the estimated trace test statistics without and with break dates, respectively. Overall, the cointegrating rank is found to be 1.

TABLE III: RESULTS OF JOHANSEN TRACE TEST WITH AND WITHOUT BREAK DATE (P-VALUE)

MI, USI	r=0	<i>r</i> =1
Intercept and no trend, without break dates	0.0120	0.248
Intercept and no trend, with break dates	0.0131	0.330

Note: The break dates are based on the dates suggested in the unit root tests. The p-values are based on [11] critical values taking into account the break date(s).

The trace statistics reveal that there is at least one linear combination in the long run, and hence, there is a long run equilibrium relationship between the Malaysian interest rate and US interest rate. The evidence of cointegration between the Malaysian interest rate and US interest rate during the period of fixed exchange rate regime and open capital account suggest that Malaysia did not possess monetary autonomy during this period, thus, implying that Malaysia is not exempted from the impossible trinity.

Nevertheless we need to estimate the short-and long-run parameters to make further inferences. In this study, we employ three different cointegrating estimators to estimate the long-run coefficients as shown in Table IV. Among them are the Maximum Likelihood Estimator (MLE) as proposed by [8], the Dynamic OLS (DOLS) approach as suggested by [12], and the Fully-Modified OLS (FMOLS) approach as suggested by [13]. This is to check for the robustness of the estimation results and also to provide more efficient estimates in our relatively small sample study. Moreover, the results in Table IV show that the US interest rate is
statistically significant across the different cointegrating equation estimators.

TABLE IV: THE LONG-RUN ESTIMATES						
	MLE	FMOLS	DOLS			
Intercept	1.56 ^{***}	3.74 ^{**}	2.00 ^{***}			
	(0.12)	(0.26)	(0.34)			
USI	0.31 ^{***}	0.44 ^{***}	0.20 ^{**}			
	(0.10)	(0.09)	(0.09)			
Dummy	1.13 ^{***}	3.74 ^{***}	0.70 ^{***}			
	(0.20)	(0.26)	(0.23)			

Note: We estimate r on r^* where r is the interest rate in Malaysia and r^* is the interest rate in US. Our model includes an intercept and the dummies for period 2002:6 onwards. For DOLS, the lags and leads are each set to 1 and 1. For FMOLS, the optimal lags were set using the AIC criteria. Parentheses indicate standard error. *, ** and *** denote significant levels at 10%, 5% and 1% respectively.

The Error-Correction Model (ECM) is estimated to derive the short-run parameters as shown below:

$$\Delta m_{i_{t}} = 0.015 - 0.41ECT_{t-1} - 0.71\Delta m_{i_{t-1}}$$

$$(0.02) \quad (0.09) \qquad (0.31)$$

$$-0.97\Delta m_{i_{t-2}} - 0.21\Delta m_{i_{t-3}} - 0.24\Delta m_{i_{t-4}}$$

$$(0.26) \qquad (0.15) \qquad (0.15)$$

$$+0.44\Delta usi_{t-1} + 0.22\Delta usi_{t-2} + 0.20\Delta usi_{t-3}$$

$$(0.25) \qquad (0.25) \qquad (0.24)$$

$$+0.42\Delta usi_{t-4} + 0.60\Delta dum_{t-1} - 0.33\Delta dum_{t-2}$$

$$(0.22) \qquad (0.31) \qquad (0.28)$$

$$-0.47\Delta dum_{t-3} - 0.40\Delta dum_{t-4}$$

$$(0.28) \qquad (0.28)$$

 R^2 =0.72, *F*-stat=6.28, Log-likelihood=31.71, where the parentheses contain the standard errors.

The ECM shows that the Error Correction Term (ECT) is highly significant and negative suggesting that 41 percent of the disequilibrium is eliminated within one period (i.e. one month in this study). There is no 100% adjustment to eliminate the disequilibrium in a single month; we interpret that BNM does retain some short run monetary autonomy during the period concerned. We attribute this short term monetary autonomy to sterilization activities conducted by BNM [3]. BNM undertook active sterilization operations to absorb the capital inflows to avoid excessive liquidity in the domestic financial market since the installation of the fixed exchange rate regime.

IV. CONCLUDING REMARKS

We used a cointegration framework to examine whether Malaysian interest rates are driven by the US's interest rates during the fixed exchange and open capital account regime. We were careful in determining the order of integration of the underlying variables in the model prior to the cointegration test. This is important to ensure that Johansen cointegration test is an appropriate test in this study. Upon very careful inspection of the Johansen tests, we found evidence that Malaysia's interest rate cointegrated with the interest rate in the US during the period of fixed exchange rate and open capital account regimes, suggesting that Malaysia is not exempted from the impossible trinity.

Our empirical results suggest that the trinity was at work for Malaysia during the periods of this investigation. It is not possible to have a fixed exchange rate, monetary policy autonomy, and open capital markets at the same time. Our study demonstrates that fixed exchange rates involve a loss of monetary policy autonomy. If a country wants to have its own monetary policy, then, it has to let the exchange rate float freely in an open capital account regime. In other words, a combination of an open capital account, a fixed exchange rate and an independent monetary policy is not possible. That explains why Malaysia moved away from a fixed exchange rate to a managed float on 21 July, 2005.

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Economic Diversification by Boosting Non-Oil Exports (Case of UAE)

M. Hazem Shayah

Abstract—UAE, the world's eighth biggest oil producer, maintains a free-market economy with minimum restrictions on private-sector activities, international trade and capital movements. In spite of the impact of the global economic recession, the UAE's economy has proved to be remarkably flexible. In this paper we will see that UAE Economy is one of the most diversified economies between the Arab countries because it's not just relying on oil, it has also so many important sectors which play a big role in the Economic development of the country like Trade and tourism, and in this paper we will the role of non-oil Exports in the Economic diversification.

Index Terms—Economic diversification, non-oil exports, trade, UAE.

I. INTRODUCTION

The United Arab Emirates (UAE) is the centre for international business in the Gulf region with strong international trade status and huge state-owned investment fund invested in real and financial assets.

Higher oil prices, increased government spending and a notable resurgence in tourism, transport and trade have contributed to the upswing in the economy. Additionally, the successful restructuring of debt owed by high-profile emirates companies, harmony among the and accommodative monetary and fiscal policies have all played a role in bringing stability to the market. Political confusion in the Middle East and North Africa has not impacted negatively on the UAE's economic growth since it is considered to be one of the most politically stable and secure countries in the area and relatively safe place for tourism and investment.

The United Arab Emirates is a federation of seven monarchies: Abu Dhabi, Ajman, Dubai, Fujairah, Ras Al-Khaimah, Sharjah, and Umm al-Qaiwain. The government has done some reform during the 2011 by initiating a \$1.6 billion program to improve the infrastructure in the poorer northern emirates. Abu Dhabi accounts for about 90 percent of oil production; Dubai is the center of finance, commerce, transportation, and tourism. Free trade zones that permit 100 percent foreign ownership with zero taxation help to diversify the economy, but UAE nationals rely heavily on public-sector employment and subsidized services. Hydrocarbons account for roughly 80 percent of total government revenues.

In February 2010, the UAE launched its Vision 2021. This plan was preceded by the National Work Program from 2005,

in addition to the UAE Government Strategy (2008–2010). Following the launch of Vision 2021 , the government published the UAE Government Strategy (2011–2013).

II. CONCEPT OF ECONOMIC DIVERSIFICATION

Economic diversification is when the country has incomes from many different sources that are not directly related to each other. A good example of a poorly diversified economy is that of Saudi Arabia. A very large part of their income depends on the production and sale of oil to other countries, which means that their standard of living sometimes fluctuates wildly in correlation with the price of oil. South Korea economy is a good example of a better diversified economy. Because South Korea gets its income from many different types of economic activity including: manufacturing, automobile, Hi tech industries, and financial services.

In general economic diversification is taken as the process in which a growing range of economic outputs is produced. It could also refer to the diversification of markets for exports or the diversification of income sources away from domestic economic activities (i.e. income from overseas investment).

Economic diversification in its standard usage, either in terms of the diversity of economic activities or markets, is a significant issue for many developing countries, as their economies are generally characterized by the lack of it. They have usually relies heavily on the production of primary commodities that are mostly vulnerable to climate change.

So we can say that the Middle East's reliance on oil for its wealth is the main issue which makes Diversification for this region is a highly desirable aim, but how can it be achieved? One key requirement is innovation, which is why governments in the region have started different initiatives to foster innovation, with varying levels of success.

There are some barriers to growth in GCC countries which are envisioned in the plans and we think diversification can play a leading role in overcoming them, some of these barriers are:

- The future depletion of the hydrocarbon reserves.
- The second is the fluctuating price of oil.
- Third is the current economic model, the allocation state model.
- Fourth, there are the future difficulties of securing high living standards for the population, since the governments in all the states, with the possible exception of Qatar, do not have the financial means to act as the sole sponsor of the vast-welfare societies established over the last century.

Diversification is seen as a means to solve all of the above

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problems, or barriers to growth. In all the plans, diversification is understood as vertical diversification, where the crude output from the hydrocarbon sector is either processed into downstream products like petrochemicals or used an input into the manufacturing sector, such as in aluminum smelting or steel production. In both cases the value added benefits the country. Second, vertical diversification entails the growth of non-oil related manufacturing and especially service industries [1].

As a result, we can say that Economic diversification is so important for GCC countries and in particular the UAE. Recently GCC countries have taken some steps in achieving economic diversification.

UAE was the most competitive economy in the Middle East, more than many of the developed countries, according to IMD World Competitiveness Centre Index (2013). The index ranked the emirate as the 8th most competitive economy in the world, more competitive than France (28), Japan (24), Australia (16), Spain (45), Portugal (46), and Russia (42). IMD rated Canada just one notch above the UAE, ranking it 7th most competitive economy globally [2]. Official figures have showed that Abu Dhabi and Dubai have been investing billions of dollars to diversify their economies in order to diminish reliance on oil and petrochemical sectors. Both the emirates are pumping money into trade, tourism, logistics, aviation, infrastructure and banking and finance

The member countries of the Gulf cooperation council (GCC) passed major economic transformation over the past decade. The main goal of the economic policies set into place was to diversify their economies away from the oil sector. This long standing problem is linked to the non-renewable nature of oil resources. The instability of oil revenues combined with strong demographic expansion have brought the topic back into the headlines especially after the new rules regarding labor force in GCC countries and the need to create jobs, all of these factors lead to start the new polices like Emiratization which is a government policy designed to increase the participation of native workers in the production of goods and services in the UAE private sector. The policy has its origins in the 1990s out of government's concerns of private sector's heavy reliance on expatriate labor, high unemployment among native workers and the expectation of a relatively young Emirati population entering the labor force by the mid 2010s. It is estimated that in the next ten years, 200,000 young Emirati nationals (or 25 percent of the current Emirati population) will be entering the labor force [3].

III. UAE ECONOMY

A. Introduction

The UAE has an open economy with a high per capita income and a great annual trade surplus. Successful efforts at economic diversification have reduced the portion of GDP based on oil and gas output to 25%. Since the discovery of oil in the UAE more than 30 years ago, the country has undergone a deep transformation from a poor region of small desert principalities to a modern state with a high standard of living. Like The Infrastructure in the UAE is really well developed following a period of rapid growth that saw the

construction of residential, tourism, industrial and commercial facilities on a huge scale, because of that the UAE has become a major market for Chinese construction contracts in the Gulf region. The realized revenue of construction contracts for Chinese companies in the UAE soared from \$55.16 million in 2001 to \$3.62 billion in 2009[4].Lately the global financial crisis, reduced international credit, and discouraged asset prices constricted the economy in 2009. UAE authorities tried to solve the crisis by more government spending and boosting liquidity in the financial sector. The crisis hit Dubai hardest, as it was heavily exposed to depressed real estate prices. Dubai lacked enough cash to meet its debt obligations. The UAE Central Bank and Abu Dhabi-based banks bought the largest shares. In December 2009 Dubai received an additional \$10 billion loan from the emirate of Abu Dhabi.

B. Oil Sector in UAE

Even though the relative contribution of the different economic sectors to GDP have shifted obviously over the years, the oil and gas sector has represented the largest share in the UAE, since the country is endowed with huge resources of oil and gas. The UAE possesses nearly 10% of the world's total reserves, and there is no doubt that oil will continue to provide the income for both economic growth and the expansion of social services for several more decades at least. Oil production is around two million barrels a day. Gas is increasingly important, both for export, and for meeting local demand, from domestic and industrial consumers and for power generation and water desalination plants. Over the years, the federation has been a strong supporter of OPEC and has generally adhered to its quota, even though the situation has meant that Abu Dhabi has had to produce well below its actual production capability [5].

C. Balance of Payment

According to the UAE Central Bank, high oil prices and the performance of non-hydrocarbon exports were the drives behind an increase in the trade account surplus from Dh154.6 billion in 2009 to Dh179.9 billion in 2010 and Dh292 billion in 2011(one USD is about 3.67 AED). The balance of services and transfers, are traditionally negative in the UAE (i.e. the related flows of funds leaving the country are higher in value than the flows coming in) and as a result the current account surplus was much lower than that of the trade balance in these years, reaching Dh28.8 billion in 2009, Dh26.6 billion in 2010 and Dh112.7 billion in 2011[6].

D. Boosting Non-Oil Exports

United Arab Emirates (UAE) has got special particularity in regards of investment environment from the prospective of politics, policy, regulation, investment barriers, and restrictions. Foreign investors in the United Arab Emirates enjoy a set of substantial incentives and benefit from first-rate transport and communication infrastructures. The United Arab Emirates grants 100% ownership to foreign investors in its free zones, does not levy taxes, and dispenses with restrictions on the transfer of capital to and from the country. In addition, the cost of gas and electricity is moderate and the exchange rate of the national currency, the dirham, against the United States dollar has been stable since 1980 [7]. The World Trade Organization (WTO) ranked the UAE as the world's twentieth biggest exporter of merchandise trade in 2011, surpassing countries such as Australia, Brazil, Switzerland and Sweden. According to the WTO, the UAE's exports of US\$285 billion (Dh1.045 trillion) in merchandise trade in that year amounted to 1.6 per cent of the world's exports, which stood at US\$18.215 trillion. The WTO also lists the UAE as the world's twenty-fifth importer based on UAE imports of Dh752.35 billion (US\$205 billion) in 2011, 1.1 per cent of the world's imports of US\$18.38 trillion. Continued growth in trade is the result of the UAE's determined policies of opening new markets, engaging new trade partners and increasing economic diversification. Fig. 1 released by the UAE National Bureau of Statistics highlight that in the first nine months of 2012 non-oil trade increased from Dh684.9 billion in the same period in 2011 to Dh782.7 billion in 2012, up 10.5 per cent. Exports were up by 61 per cent from Dh84.4 billion to Dh136.6 billion and imports rose by 12.3 per cent (from Dh439.9 billion to Dh494.5 billion) in the same period. The Value of the re-exports dropped by 5 per cent to Dh152.6 billion. Non-Arab Asian countries (45 per cent), maintained their position as leading partners in UAE non-oil trade, the EU came second (23 per cent), America was ranked third (9.3 per cent) and the GCC fourth (8 per cent).

Gold tops both the import and exports with diamonds leading re-exports. Other significant exports are polyethylene, polypropylene and crude aluminum. So many studies by the Ministry of Foreign Trade highlight the significant role of plastics in UAE trade. According to the report, the UAE came third globally in the re-export of plastics in 2011, re-exporting US\$444 million worth of the product constituting a 3 per cent share of the worlds re-exports of plastics. One of the studies indicates that exports of plastics from the UAE increased by 127 per cent (US\$2.2 billion) from the first six months of 2011 to the same period in 2012. Regionally, the study stated that the UAE produces 25 per cent of all plastics produced within the Gulf Cooperation Council (GCC), pointing out that the country has over 600 plastics factories spread out across the seven emirates and through the huge Free Zones. For example of the Free Zones in UAE we have Jebel Ali Free Zone, Dubai Airport Free Zone (DAFZ), Ras Al Khaimah Free Trade Zone, and Dubai Industrial City (DIC).

Borouge, one of the largest plastics factories in UAE, is expected to produce 2.5 million tons of plastics in 2014 from the current capacity of just over 2 million tons.

After reaching a peak of 210.0 billion US\$ in 2008, the value of the exports of United Arab Emirates contracted sharply by 16.8 percent in 2009 but increased again in 2010 by 13.5 percent to amount to 198.4 billion US\$. Imports increased by 10.0 percent in 2010to 180.7 billion US\$. The trade surplus went up to 17.6 billion US\$ in 2010 from 10.5 billion US\$ in 2009.During the years preceding the global economic crisis the UAE's economy was performing fairly well. The United Arab Emirates GDP Growth Rate reached an all time high of 9.8 percent in 2006. While in the next two years (2007 and 2008) the pace of growth has diminished to 3.2 percent at constant prices. The Non Oil sector

experienced a higher rate of growth of 9.3 percent in 2007 and a good 6.0 percent in 2008. Conversely, the global crisis has severely hit the UAE economy, so the GDP contracted of 4.8 percent at constant prices in 2009, led by a remarkable fall in manufacturing, but also in real estate. The year of the crisis, i.e. 2009, hit more heavily the economy on the whole than the Non Oil sector, which experienced a decrease of 2.9 percent. But the manufacturing industries have particularly suffered with a decrease of 14.1 percent. However, the economy regained confidence after the crisis. In 2010 the growth of GDP was a respectable 1.3 percent at constant prices [8].



Fig. 1. Total imports, exports and trade balance (billion US\$ by year).

IV. DIVERSIFICATION IN UAE

Diversification is so important to promote development, and create job opportunities. However, this growth must not come at the expense of stability. So Inflation, fiscal balance and other Economic levels must be ensured., policy makers must make sure about their ability to drive the economy in order to reduce reliance on foreign companies and workers. In general we can say that an increased economic diversification can improve the performance of the economy and reduce volatility. Dubai has been the most proactive and eager emirate in its attempt at diversification in the GCC region. Through a historical commitment to a business-friendly environment, with openness towards foreigners in business and in society in general, as well as a strong belief in the proactive role of the 'state' in the economy. The key elements of the 'Dubai model' of economic development are the following: 1) government-led development, 2) fast decision making 'fast-track' development, 3) a flexible labor force through importing expatriates, 4) by passing industrialization and creating a service economy, 5) internationalizing service provision, 6) creating investment opportunities, 7) supply-generated demand, 8) market positioning via branding, and 9) development in cooperation with international partners [9]. after all what we have seen, we can say that exporting and reexporting has played a huge role in promoting and maintaining the process of economic diversification by adding value of the non-oil GDP, in Table I we can see trade data of the years (2005-2011).

YEAR	IMPORTS		NON-OIL EXPORTS		RE-EXPORTS	
	WEIGHT (In KG)	VALUE (In AED)	WEIGHT (IN KG)	VALUE (In AED)	WEIGHT (In KG)	VALUE (In AED)
2005	46,551,574,131	247,589,715,083	19,777,449,641	16,462,607,861	7,695,398,517	97,043,197,533
2006	48,854,525,569	291,048,964,687	68,646,135,709	29,232,285,857	8,944,782,694	95,580,167,401
2007	56,039,666,989	388,356,836,394	41,732,706,035	36,262,324,842	8,934,934,038	128,338,414,920
2008	62,469,851,769	565,719,823,370	35,137,024,727	60,359,055,129	9,328,003,555	162,844,575,681
2009	49,047,871,441	447,393,840,482	22,389,227,100	65,278,896,534	8,839,731,000	147,693,366,837
2010	47,720,694,580	485,413,921,746	19,892,372,520	83,077,687,323	8,733,199,965	185,863,253,742
2011	52,216,661,963	602,757,314,852	24,326,946,906	114,038,287,878	8,553,466,009	210,842,814,591

TABLE I: UAE TRADE DATA

Source: National Bureau of Statistics UAE

V. CONCLUSION

UAE economy regained confidence after the crisis because of the high diversification of the Economy. But we think that UAE's economy to become more diversified and competitive it must has new companies those are, radical innovators able of integrating heterogeneous technologies and using the best scientific and technological research, but also should produce and export different kinds of products and not just rely on the oil sector. But also we can say that continued growth in trade can be attributed to the UAE's determined policies of opening new markets, engaging new trade partners and increasing economic diversification which I think it can continue in UAE in the coming years.

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Increasing Halal Tourism Potential at Andaman Gulf in Thailand for Muslim Country

Sureerat Chookaew, Oraphan chanin, Jirapa Charatarawat, Pingpis Sriprasert, and Sudarat Nimpaya

Abstract—The main aim of this research is to develop the potential of Halal tourism on the Andaman Gulf in Thailand for a group of the tourists from Muslim countries. There shall be five research objectives, which are; to propose the method of making the marketing plans of the Halal tourism for all tourists from Muslim countries; to offer either the entrepreneurs or tourism businessmen many choices in Halal tourism management for tourists from Muslim countries; to study about the way to develop the potential of Halal tourism management in order to support the tourists from Muslim countries; to be a model of setting administration standard, and Halal tourism management for tourists from Muslim countries; and to offer tourists from Muslim countries alternative choices of consuming Halal products and services.

Index Terms—Model of Halal tourism, Halal tourism business, Andaman Sea Coast of Thailand.

I. INTRODUCTION

Tourism is one of the most important sectors of the Thai economy with highest earning of foreign currencies [1]. Thailand has diversity in tourism resources; especially in geography, climates, biology and flora & fauna. These enable an increasing number of both Thai and international tourists to be able choose travel many provinces of Thailand. Also, Thailand is reputed in cultural tourism. Thus, Thai government had continually promoted the development of tourism in various tourist destinations throughout the country [1].

Halal Tourism is a market segment that is fast growing not only in Muslim countries but globally. Non-Muslim countries like Australia, Taiwan, Korea, Japan, countries in Europe, are specifically catering to do this tourism segment, the Islamic tourism [2]. There are close to 1.7 Muslims worldwide who are becoming more affluent and traveling with their families and friends. It used to be that Muslims travelled overseas for either Hajj and Umrah. Now they have learned to take time to travel [3].

Now it's easier to find Halal food in non-Muslim countries; hotels are also trying to meet Muslim travelers' demands by showing the Qa'aba direction for prayer [3]. My event, the world Islamic Tourism Mart, is the ideal platform for tourism industry sectors to take part, meet, network, and create new opportunities to increase the capture of the Muslim tourism market segment [2].

This paper focuses on the Halal tourism. Halal tourism, as permissible under Halal Restaurants, Halal/Shariah-compliant hotels and Halal Spa.

II. LITERATURE REVIEW

A. Definition of Tourism

Tourism is one of the most important and fast expanding sectors of the world economy [4]. It is also a major source of foreign exchange earnings for many developing countries. Tourism, because it has become such a large industry, has numerous impacts which can be felt and seen worldwide and that affect all forms of life. The effects of these impacts can be advantageous but they can also cause many disadvantages and bring many problems with them [2]. If tourism is managed properly (sustainable tourism), it can increase the benefits for or have positive impacts on the social and natural environment in the host area and reduce the negative effects significantly [4]. Tourism is defined by as follows:

"Tourism comprises the activities of persons travelling to and staying in places outside their usual environment for not more than one consecutive year for leisure, business and other purposes not related to the exercise of an activity remunerated from within the place visited [4]. Tourism is different from travel. In order for tourism to happen, there must be a displacement: an individual has to travel, using any type of means of transportation he might even travel on foot: nowadays, it is often the case for poorer societies, and happens even in more developed ones, and concerns pilgrims, hikers. But all travel is not tourism" [2].

B. Halal Tourism

Halal tourism is a new concept in the tourism industry. Thus, there a need to develop more Halal tourism products and services to cater to this dynamic and emerging market [5]. The concept of Halal, meaning permissible in Arabic, is not just being applied to food, but it includes any Shari'ah compliant products ranging from bank dealings to cosmetics, vaccines and in this case, tourism [5]. This means offering tour packages and destinations that are particularly designed to cater for Muslim considerations and address Muslim needs [6].

Halal Tourism integrates more religious conservative motivations, trying to valorize a conservative Islamic lifestyle and underline its incompatibility with Western type of tourism practices currently dominating the modern tourism industry [6].

The demand for Halal resorts, hotels or transport-tation reveal's the reluctance of religious conservative families and

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Individuals to travel in liberal or western style locations and the condemnation of travel behaviors regarded as un-Islamic [3]. The hotels in such destinations do not serve alcohol and have separate swimming pools and spa facilities for men and women. Malaysia, Turkey and many more countries are trying to attract Muslim tourists from all over the world offering facilities in accordance with the religious beliefs of Muslim tourists. Also, the Halal tourism approach covers flights where no alcohol or pork products are served, prayer timings are announced, and religious programs are broadcast as part of entertainment offered on board [5].

C. Opportunities

The Halal economy, which is rapidly expanding, offers opportunities to other Muslim countries worldwide. There is nearly 1.57 billion Muslims, in over 100 countries, making up over 23% of the total global population [3]. This will ensure that the Halal concept can be applied to more than just the food sector. In addition, the manufacture, processing and distribution of products, additives and food ingredients, Halal economy also applies to cosmetics, medicines and personal care products, clothes and services that include finance, hotels, restaurants and logistics. This statistics of the significant population of Muslims stress the enormous potential waiting to be tapped in the Halal economy [7].

Regarding to the tourism sector, in Thailand, it is recognized as a major economic and social significance that contributes to the creation of wealth. As reported of Tourism Authority of Thailand, the tourism sector has been identified as a driver of economic activity that will contribute towards the growth and development of the economy [1]. The Thai Government has granted many incentives to tourism agencies to develop other promising areas in the tourism industry [1].

D. Halal Tourism Business

The fundamental of Halal tourism includes the components such as Halal hotel, Halal transportation, Halal food premises, Halal logistics, Islamic finance, Islamic travel packages, and Halal spa [8].

Halal hotel is one of the hotels which provide the Halal services to the Muslim tourists. This type of hotel is not limited to serve Halal food and beverages but the operation throughout the hotel would also be managed based on Islamic principles [7].

Halal food premises: Food and beverage products served in a restaurant have to be Halal. Animals such as chicken and cow must be slaughtered according to Shariah principles. All food must be Halal and go through Halal compliant process [5].

III. METHODOLOGY

Applied research was used in this study to "find solutions to problems which arise in particular management situations" [9]. The sample group were10 Muslim tourist from Jordan, Malaysia, Libea, and Oman, tour guides, officers of the provincial offices of the Islamic Council in the Andaman Sea coast, and officers of the Central Islamic Council of Thailand. The research instrumentsincluded a questionnaire, observation and focus group discussion. The research instruments included a questionnaire, observation and focus group discussion.

IV. FINDINGS AND ANALYSIS

The result of this research is divided into five main points as the following;

- 1) The methodology of making a marketing plan of the Halal Tourism are;
 - It is useful to provide the travelers all information associated with the tourist attractions on the Andaman side in Thailand via the Internet.
 - The impression to the tourists is one of the factors, which can bring about the word of mouth strategy.
 - It is necessary to provide the measure of the beach conservation for the purpose of keeping the beaches clean and beautiful.
 - Supporting all restaurants to get Halal certification standard should have executed, and also to increase the number of the Halal restaurants.
 - Hotel rooms should have the direction signs for praying, as it is indispensable for tourists from Muslim countries.
 - Spa service business should separate the service rooms between man and woman.
 - There should be direction signs to the mosques in both English and Arabic.
- 2) The choices of enterprises in business management in order to support all travelers from Muslim countries found that the form of Halal tourism management is classified into many elements as shown below;

A. Halal Restaurant Business

Halal restaurant business is divided into 11 elements including location and materials/ products, procedures, staffs, and containers/ implement, refuse disposal, safety, service, social responsibility, environmental management and community relations. All those elements are in line with the standard of Halal food service issued by the Central Islamic Council of Thailand.

B. Halal Hotel Business

Additionally, the form of the Halal hotel business consists of eight elements comprising location, staffs or personnel, refuse disposal, safety, corporate social responsibility, environmental service and community relation.

C. Halal Spa

In addition, the business of Halal spa is composed of nine elements including location, material/ products staffs, refuse disposal, safety, service, social responsibility, environmental management, and community relation.

The method of increasing the potential of management of Halal tourism in order to handle all tourists from a group of Muslim countries found that natural resources from the tourist attractions should be conserved so as to keep it beautiful naturally. Moreover, there shall also be many activities, which are not against with the Muslim principles.

Even more, there are a lot of direction signs showing the

way to the mosques written in both English and Arabic. All washrooms should be separated between man and woman. The rooms should be hygienic condition, cleanliness with the cleaning hose built in its room. What is more, there are many Halal restaurants along the way to places of interest, together with the direction signs should be written in English setting up all the way around in the tourist attraction territory.

Furthermore, there is measure of security each tourist attractions. Guides and staffs should have discipline, and respect the Muslim principles in doing services. The boat drivers should drive it carefully. If the technical problem happens, the drivers have to be sure that there are enough of the aid equipment for all tourists.

Besides, at the airport or the tourist places should have the greeting signs regarding welcoming them to our country which is written in Arabic. Public relations to the tourists from Muslim countries should be promoted via the Internet. Apart from that, a good service can make tourists feel impressive, and that can lead to the word of mouth strategy. Last but not least, the form of restaurant business management, hotel business, and Spa business should be in line with the standard of Halal tourism management.

The ways to measure the standard of Halal tourism administration and Halal tourism management for all travelers from Muslim countries are divided into eight factors.

- 1) The service to the tourists should match up with the Muslim principles the whole journey.
- 2) Guides and staffs should have discipline and respect to the Muslim principles.
- 3) Setting all activities should not against with the Muslim principles.
- 4) Building accommodations should conform to the principles of Muslim. For instance, inside the accommodation should have the direction signs turning to Mekka (West if praying from Thailand). Aside from that, cleaning hose should also be set up in its room.
- 5) Restaurants should follow the International standard service of Halal.
- 6) The transportation service should have security protection system.
- 7) There are places provided to all Muslim tourists to perform religious activity.
- 8) Traveling to the places where against the religious principles is prohibited.

It is necessary to offer choices to the tourists from Muslim countries. What if the organizations either government sectors or private sectors bring this research to develop their institutes or their own businesses. It leads to the increasing of the potential of tourism in Thailand. This can easily make all travelers from Muslim countries come to travel in Thailand more and more. Meanwhile, there will then be an influx of the large amount of money flowing into Thailand as well.

V. CONCLUSION

The initiative of developing Halal tourism in Thailand which will be focus Halal Hotel, Halal foodand Halal spa service when the Muslim tourists are traveling. Because of the demand from the Muslim market towards Halal services therefore, there is essential for Thailand to develop a concept for Halal tourism Business. Furthermore, Halal tourism will directly fulfill the Muslim needs thus, it will become one of the niche product for the tourism industry in Thailand.

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Spectrum Allocation Methods: Studying Allocation through Auctions

Syed Atif Jilani

Abstract-Auctions have been used as a mechanism of selling goods and services for thousands of years. The earliest example of auctions can be traced back to AD 195 when Roman Empire was auctioned off to Julianus. There are numerous examples of Auctions in our daily life but auctions caught the imagination of economists, governments and common people alike when spectrum rights were auctioned by FCC in 1994 in the US. Prior to using auctions for spectrum allocation other methods like administrative process, lottery and first-come-first serve were widely used. Since FCC's auction a number of countries switched to auctions for spectrum allocation because of there comparative advantages over other methods. This paper critically analysis the pros and cons of different methods used in spectrum allocation. The method of using Simultaneous Ascending Auctions in allocation of spectrum is discussed along with the advantages that may accrue from this method.

Index Terms—Spectrum allocation methods, simultaneous ascending auctions (SAA).

I. INTRODUCTION

From July 1994 to July 1996, the Federal Communications Commission (FCC) conducted nine spectrum auctions, raising about \$20 billion for the US treasury [1]. These auctions were described as "*The Greatest Auction in History*" (William Safire, New York Times, March 16, 1995) and "*The Auction of the Century*" (Liberation, Paris, March 15, 1995) because of their efficiency and sheer volume of revenue they generated [2].

Auctions were first used by the New Zealand government in 1990 to sell spectrum rights. This electromagnetic spectrum is in high demand the world over. By mid 2010, there were nearly 132 countries having access to 3G technology, India joining late in April 2010 by auctioning off the 3G spectrum licenses. According to a report in Times of India [3], there are 4.7 billion mobile users worldwide, of which nearly 10% are 3G users. For Asia-Pacific region only, the projections are pegged at 564 million users by the end of 2013.

There are different methods like – administrative process, lottery, first-come-first-served and auction-economic theory - by which spectrum rights can be allocated to various firms but auctions works best [4]. Out of these four methods of spectrum allocation, the 1990's has seen a shift of preference from administrative allocation process to auctions. As of now auctions are widely used in United States, Colombia, India, United Kingdom, Argentina, Australia and Hungary. This is a conceptual paper based on literature available on spectrum allocation through auctions. In Section II of this paper various methods of spectrum allocation are analysed. Section III covers the review of literature on spectrum allocation by auctions. In Section IV, the design of spectrum auctions is discussed along with the activity rules. Advantages of spectrum allocation through auctions form a part of Section V. Misconceptions regarding auctioning of spectrum rights are examined in Section VI. Finally, Section VII concludes the entire study.

The broader objectives of this study are:

- 1) To compare the different methods of spectrum allocation employed in different countries;
- 2) To discuss the activity rules of spectrum auction allocation;
- 3) To evaluate the advantages of spectrum auctions; and
- 4) To provide explanation for some of the misconceptions that surround auctions.

II. METHODS OF 3G SPECTRUM ALLOCATION

Auctions and beauty contests (administrative process) have been the preferred option for the allocation of 3G spectrum in most of the countries. But in few places in Europe licenses were offered free of charge to the incumbent mobile operators in the Isle of Man, Liechtenstein and Monaco [5]. There are arguments and counterarguments in favour and against of different methods of spectrum allocation.

Auction theorist consider that auctions lead to efficient allocation of spectrum among the bidders while proponents of beauty contest argue that auctions increases the price of spectrum, which has to be ultimately born by the customers. The following Table I provides a comparative analysis of various methods of spectrum allocation in practice:

	TABLE I: METHODS OF SPECTRUM ALLOCATION						
S. No.	Method	Time Consumption	Efficiency	Revenue Generation			
1	Administrative process	Time consuming	Marked by red- tape	Not much			
2	Lottery	Time efficient	Least efficient	Not much			
3	First-come- first-served	Time efficient	Less efficient	Not much			
4	Auction	Time efficient	Efficient	More revenue			

A. Administrative Process

The earliest method used for spectrum allocation has been

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the administrative process, widely practised in Canada and European Union. This method is also sometimes dubbed as "beauty contest". The criteria for allocation of spectrum is developed by the government and then an in-house committee of experts scan various proposals in light of the government laid criteria. Such a process gives a lot of flexibility to the government in determining the acceptance of a particular proposal. Although, the process is time consuming but the process adheres more to the government plans.

However, this method is not free from critics. It's widely perceived that technical aspects are clearly defined in the criteria set by government but there are subjective criteria like the ability of firm to implement the proposal, the telecom industry concentration and the feasibility of proposal that can't be specified in concrete terms. Some of the criteria are vague and some are not even stated. It provides a lot of room for lobbying and favouritism. This creates a very difficult situation for the applicant firm. They are not aware of the weights assigned to various subjective criteria and not any kind of explanation for rejection of their application. It's the lack of transparency and time consuming nature because of which administrative allocation method is hugely criticised.

B. Lottery

The second method of spectrum allocation is lottery. It is perceived to be more quick and economical as compared to administrative process. Lotteries too are not free from some serious short comings. They are rejected on the grounds that they lead to speculation and the technical competence of the firm to develop, maintain and operate the license can not be determined through them. After rejecting the administrative process United States experimented with lotteries in allocating cellular licenses during 1980s. Lotteries attracted many speculative applicants, many of whom were not technically competent. Such applicants after winning the licences sold them off to other firms at exorbitant prices leading to notional losses to government coffers.

C. First-Come-First-Served

Some of the European Union members resorted to firstcome-first-serve basis of allocation of mobile radio licences. This process has the time advantage but has the same disadvantage as the lottery.

D. Auction

In the year 1993, United States decided to switch to auctions for granting new mobile communication licences. The Federal Communication Commission (FCC) was asked to design and operate the auction process for granting licences. The commission came up with a novel method of auction termed as *the electronic simultaneous multiple round bidding auction*. This method has been copied round the world to sell over US\$100 billion in radio spectrum [6].

Binmore and Klemperer (2002) [7] while advocating for auctions over beauty contests argued that the 'second generation' licenses fetched the UK government only 40,000 pounds as compared to 3G spectrum auctions which yielded about $2\frac{1}{2}$ % of GNP. Spectrum auctions proved that they can play a vital role in nation building by reducing the government debts and lowering the income taxes on public. They extract and provide information to governments which can't be assessed through beauty contests.

III. LITERATURE REVIEW

Simultaneous Ascending Auction (SAA) was considered by Klemperer (1999) [8] as the most important new auction design. According to him the germs of SAA can be traced to Vickrey, 1976 but the onus of practically designing such auctions for the first time goes to Milgrom, Wilson and McAfee who proposed the rules that were necessary to make the SAA effective in the context of US radio spectrum auctions.

Cramton (1997) [9] has analysed the six spectrum auctions conducted by FCC from July 1994 to May 1996. Cramton argues that this auction format had theoretical virtues which were never proven. FCC chose to innovate. The auctions went on smoothly with some minor hitches and were termed as very successful. Cramton adds a note of caution also that the success of these auctions doesn't imply that alternative methods were less successful and that the success is assured in future also. Although allocation of spectrum by auctions is a huge improvement over allocation by lottery or comparative hearings.

The British government raised twenty-two billion and half a million pounds in the auction of five telecom licenses. These auctions and a few subsequent European auctions along with FCC auctions can be termed as the greatest auctions after the auction of Roman Empire to Julianus in 195 A.D.

Klemperer (2002) [10] while commenting on B örgers and Dustmann (2002) result's reports that the UK 3G telecom auction of 2000 is considered as the most successful of the Western European 3G auctions in terms of revenue raised per capita and efficiency. The aspect of revenue was most obvious. But the efficiency aspect was probed by different researchers and was found to be efficient or close to be efficient, in the sense of maximizing the sum of the valuations of the license holders. The pre-auction and postauction data suggest that the four-incumbent firms in UK auction were having the highest valuations, so were the efficient winners. Moreover, Vodafone was having the highest incremental value for a large license and so the allocation of spectrum among the winner's was also efficient.

Lueck (1998) [11] describes the opinion of S. Moreton and Pablo T. Spiller deduced from their empirical study of the Personal Communications Service (PCS) auctions of 1995 and 1996 in USA, in which they have shown that the bidder behaviour is consistent with most economists' conceptions of competitive markets. They have also shown that firms competing in these auctions were able to aggregate licenses, thus offering vindication for simultaneous multiple-round auctions.

A detailed description of why auctions were used in spectrum allocations and which format of auction best suited such an allocation is given by Börgers and Damme (2003) [12]. They have argued that a seller wants to get the best price for the item which he/she is selling. This objective gets slightly modified if the seller happens to the government instead of a private-sector seller. Compared to revenue generation, the government will be more interested in achieving an efficient outcome – placing the license into the hands of those who value them the most. Although more revenues are also desired as they help the government to reduce the fiscal deficits and taxes. An ascending auction provides an attractive alternative, which itself can be modified to suit the particular need.

By empirically analysing the data from the 1995 US Broadband PCS auctions Klemperer and Pagnozzi (2002) [13] have concluded that when the number of objects available exactly equals the number of "advantaged" bidders, revenues will be lower in an ascending auction. A fall in revenues is because of the reluctance of the weaker bidders to participate in the auction, and those that are present bid extremely cautiously because of the enhanced 'winner's curse' they face. In US, revenues were lower when there were exactly two "advantaged" bidders among the bidders for the two licences in an area, than when there were either few or more than two advantaged bidders. They have estimated a revenue loss of around 15% to the government in such cases.

Hafalir and Krishna (2006) [14] have pondered over the idea of restriction on the resale of spectrum once sold in the secondary market. They believe that with asymmetric bidders, the resulting inefficiencies create a motive for post-auction trade. Even a ban on such a resale can be easily circumvented, as happened in 3G spectrum licences of UK. The government banned the resale of license and TIW, a Canadian company, bid successfully for the most valuable license "A". However, Hutchison, a rival company, then acquired the license by buying TIW itself.

IV. SPECTRUM AUCTION DESIGN

The method being proposed by theorist to FCC for spectrum allocation is known as Simultaneous Ascending Auction (SAA). Under the method used - all licenses were open for bidding simultaneously and remained open until bidding on all ceases. This means that instead of selling licenses, one by one, they were open for bidding at the same time and all the licenses would remain open until bidding ceased on all of them. Bidding occurred in rounds and bids were announced after each round. This helped in containing the winner's curse and thus boosted the confidence of bidders. They started bidding more aggressively.

Since the licenses are interdependent – there aggregate value may exceed the sum of their individual values - by simultaneous bidding, bidders were able to build efficient license aggregations. The FCC auctions are considered as the best example where synergies play a critical role [15]. Synergies often arise from owning licences in adjacent geographical locations or adjacent frequencies.

Bidders were having an initial eligibility based on their deposits and were supposed to remain active to maintain their eligibility. Activity was defined as the sum of standing high bids and new bids. Insufficient activity reduces the eligibility to win. The auction proceeded in three stages:

- Stage 1: bid at least 50% of eligibility
- Stage 2: bid at least 80% of eligibility
- Stage 3: bid at least 100% of eligibility

Bidders were not supposed to bid more than their eligibility. If the activity of a bidder reduces than his/her eligibility to win the auction also get reduced. A withdrawal penalty was also imposed. If a winner wants to withdraw then he/she was to surrender the license. The process of auction will start again and the withdrawer would have to pay the difference between current highest bid and his final price in case the present bid is lower than the previous final price.

V. ADVANTAGES OF SPECTRUM AUCTIONS

Auctions are considered to be more efficient in allocating the licence to that firm which can best make use of them. This is so because the firm which has the ability to start the services quickly, which can introduce new services and which believes it can utilize the spectrum more efficiently will value the spectrum more. This valuation will lead to higher bidding and more revenue generation for the government. Thus the auction designs which award the licences to those bidders who have the highest willingness to pay promote the efficient use of spectrum.

The advantages of auctions over other methods of spectrum allocation are:

- 1) Auctions help in revealing the value of a license as perceived by the bidders;
- 2) Auctions are quicker and more efficient as compared with administrative procedures;
- 3) Auctions are more transparent;
- 4) Auctions are flexible, i.e. can be moulded in such a fashion so as to suit the government policies.

The last point of flexibility needs further qualification. Suppose that the government desires to allocate a certain portion of spectrum to women or say economically weaker section of society. Based on this policy government insert a clause in the auction rules that, say for example, 10% of the spectrum will be allocated to reserved categories or the bids from such and such categories will be calculated by adding 10% to their bid value. Such reserved category firms can even be asked to pay in instalments.

Auction rules can be twisted to achieve other broader policy objectives of the government. Innovators can be rewarded by giving preference to them by making provisions in auction rules. In case the government feels that mobile or telecommunication facility needs to be provided to rural areas or far off places, special rewards can be given to firms willing to offer services in those areas. Monopolies can also be checked by framing rules in such a fashion that limits the spectrum with a particular firm. Thus auctions are capable of including most of the criteria of administrative procedure if they can be expressed in precise and explicit terms.

Activity = Standing high bids + New bids

VI. MISCONCEPTIONS

There are two flawed arguments which are given against

the auctions. First one is that the auctions take away the discretionary powers from the government. Second is that ownership of spectrum is sold to the bidders and hence it's difficult to reallocate it in future. On the face of it both the arguments are wrong.

First of all the government can control the auctions by including the desired policy decisions when the rules for auction methods are being framed. The auctions merely require the government to state all the policy decisions beforehand. Such a condition avoids unnecessary bureaucratic interventions and is very important for developing the morale of the investors. Secondly, ownership of spectrum doesn't get transferred with auctioning of it. There is only the transfer of spectrum rights and not the spectrum itself in the auction.

It's also argued that spectrum not be auctioned but should be given away because auctioning will increase the cost which the customers will have to pay ultimately. Moreover, spectrum being a natural resource should not be auctioned but should be made available free of cost to the firm which can is able to provide better services. Both of these philanthropic ideas seem to be far-off from reality.

In practise the cost of auction is born by the firm in the beginning and constitutes its fixed cost. So as per the concept of marginal cost there will be no additional burden on the customers as marginal cost doesn't includes the fixed cost. Auctions just transfer the firms profit into the government coffers.

As spectrum is a scare resource - it can't be given free of cost. Spectrum has a price tag attached to it – whether implicit or explicit. It has often been noticed that the valuations of a firm depend to a considerable extent on the number of licenses with that firm. Moreover, if spectrum being a natural resource be given free of cost why not other such resources like petroleum and natural gas. Hence such arguments are very much against the market practices and can be rejected easily.

VII. CONCLUSIONS

Methods of allocation of public assets have been debated highly amongst corporate, government and academic circles. Governments all over the world have found themselves in tricky conditions as far as allocation of spectrum rights; coal blocks; oil leases and other assets are concerned. Traditionally these allocations were mainly accomplished through administrative process where governments decided whom to allocate assets and how much as per their own laid down criteria. This method is criticized for being time consuming along with being more bureaucratic in nature. Other methods like lottery systems and first-come-firstserve also have their limitations of being low on efficient allocation and less profitable for the government. Auctions were first used for allocating spectrum rights in the US in 1993. This allocation was considered to be more efficient in terms of revenue generated for the government as compared

to other forms of allocations. The auction design used was simultaneous ascending auction where all licences were open for bidding simultaneously until bidding on all ceases.

Some researchers [10] are of the opinion that though auctions have resulted in successful outcomes but they cannot be applied in all cases. Caution must be taken while deciding on the choice of alternative for allocation of public assets. Failure of spectrum allocation in some countries has also corroborated the stand of these researchers. The success of the auction depends on the mechanism design. One size fit all approach would not be a good option for allocation of public assets.

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