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Contents

Investment Evaluation of Tourism Industry: A Case Study of Coastal Recreation Areas in Hualien Taiwan <i>Maw-Cherng Lin, Ming-Wei Yang</i>	1
Style Investing with Machine Learning <i>Philipp Kallerhoff</i>	13
Helping Families Affected by Depression: Incorporating Prosocial and Caregiving Literature <i>Magdalena Cismaru, Audrey Le Pioufle</i>	23
Long-term Dynamics of Employee Identification with an Organizational Unit <i>Kenji Matsuo</i>	32
Auditing Standard Change and Auditors' Everyday Practice: A Field Study <i>Federica De Santis</i>	41
Corporate Social Responsibility and Facebook: A Splashy Combination? <i>Hubert P. L. M. Korzilius, Maria Margarita Arias</i>	55
Tax Evasion and Tax Awareness Evidence from Jordan <i>Mohammad "Abd Alaffo" AlAdham, Mohammed Abdallah Abukhadijeh, Mohammad Fayez Qasem</i>	65
Extent of Staff Professional Ethical on Customers' Commitment in Hotel Industry: An Empirical Study - Three-star Hotels in Jordan <i>Nouria Fleah Al-Juboori</i>	76
Impact of Vertically Integrated Road Transport on Brazilian Sugar Export Logistics: A Mathematical Programming Application <i>Thiago Guilherme Péra, José Vicente Caixeta-Filho</i>	85
Perceived Risk in Tuanzhu Group Buying and Traditional Online Buying in Taiwan <i>Ying-Yu Chen, Yi-Shiang Duan, Jia-Jen Ni, Jin-Long Liang</i>	92
A Study on Housing Price in Klang Valley, Malaysia <i>Paul Anthony Mariadas, Mahiswaran Selvanathan, Tan Kok Hong</i>	103
Internationalization of Chinese Born Global Companies: An analysis from Entrepreneurial Perspective <i>Junjie Zhang, Rongyao Chen, Weibin Wang</i>	110
A Comparison of Jordanian Bankruptcy Models: Multilayer Perceptron Neural Network and Discriminant Analysis <i>Yusuf Ali Al-Hroot</i>	121
An Empirical Examination of the Relation between Consumption Values, Mobil Trust and Mobile Banking Adoption <i>Murat Burucuoglu, Evrim Erdogan</i>	131
An Analytic Hierarchy Process (AHP) Approach to Identifying Key Criteria of Taiwan's National Brand <i>Yann-Ling Wu, Wen-Hsiang Lai, Ying-Chyi Chou</i>	143

Contents

Analytical and Theoretical Perspectives on Green Human Resource Management: A Simplified Underpinning <i>A. Anton Arulrajah, H. H. D. N. P. Opatha</i>	153
Challenges of Innovation for Chinese Small and Medium-sized Enterprises: Case Study in Beijing <i>Khaled Mohammed Alqahtani</i>	165
Reviewer Acknowledgements for International Business Research, Vol. 9, No. 12 <i>Kevin Duran</i>	172

Investment Evaluation of Tourism Industry: A Case Study of Coastal Recreation Areas in Hualien Taiwan

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Abstract

An increase in the number of tourists can boost the economic prosperity of tourist attractions; over-development or over-utilization of a tourist attraction will lead to the consumption of tourism resources and reduce recreational quality. This study used relevant studies on ecotourism and recreational carrying capacity and applied the Delphi-fuzzy analytic hierarchy process to identify the critical factors affecting the recreational carrying capacity of the Hualien Qixingtang coastal recreational areas, including 4 primary factors, namely, recreational environment, natural landscape, coastal animals and plants, and cultural assets, and 13 secondary factors, such as public infrastructure. The research results can be provided as reference for relevant government authorities and operators to develop measures taking into account both the resource conservation and recreational management of coastal recreational areas.

Keywords: recreational carrying capacity, Delphi-fuzzy analytic hierarchy process, coastal recreational areas, evaluation indices, Taiwan

1. Introduction

According to the analysis report published by the World Travel and Tourism Council (WTTC) in 2014, the output value of the global tourism industry in 2013 was approximately USD 7.3 trillion, and accounted for 9.5% of global GDP. The output value of global tourism industry is predicted to reach USD 10.8 trillion by 2024(WTTC, 2015). The tourism industry has become the second largest industry globally (WTTC, 2015). In recent years, with government authorities' construction of transportation and tourism facilities and infrastructure, private operators' continuous construction of hotels and recreational attractions, and the implementation of open-door policy to Mainland Chinese tourists visiting Taiwan, government authorities and operators face the challenge of how to concurrently develop tourism to pursue maximum economic benefit, minimize the impacts on local culture and the environment, maintain the resource integrity of ecological landscapes, and maximize the satisfaction of tourists.

With the improvement of human beings' standards of living, the need for coastal recreational areas has been increasing (Saveriades, 2000; Zacarias et al., 2011; Vinals et al., 2014; Bera et al., 2015; Zhang et al., 2015). However, although the over-development of a tourist attraction can attract a huge number of tourists to boost local economic prosperity, it can also consume tourism resources and reduce recreational quality. According to recent media reports, the Knkreyan tribe of the Taroko people in Hualien have used approaches, such as road closures and firing rifles into the air, to prevent tourists from breaking into "Mukumugi", the tourist attraction where they live. This phenomenon reflects that, although the development of tourism attracts tourists, it also creates unhealthy tourism development, such as environmental impacts, overburdened roads, air pollution, littering, incorrect environmental introduction offered by tour guides, and disrespect for local cultures. Therefore, the evaluation of recreational carrying capacity can help government authorities and the managers and operators of tourist attractions to develop effective measures, giving consideration to both resource conservation and recreational management, and it can also be provided as a basis for regulations governing the number and behavior of tourists (LaPage, 1963; Dasmann, 1964; Lime & Stankey, 1971; Shelby & Heberlein, 1984; Stankey et al., 1985; Hammitt & Cole, 1998; Andrew, 1999; Manning, 2001; Clivaz et al., 2004; Dobrica & Vanja, 2007; Manning, 2010; Whittaker et al., 2011; Jurado et al., 2012).

Based on the research background and motivations mentioned above, this study systematically collected studies

concerning ecotourism and the carrying capacity of coastal recreational areas, and used the Delphi method, expert interviews, the fuzzy analytic hierarchy process (FAHP), and a questionnaire survey to perform investigations, identify critical factors affecting the carrying capacity of coastal recreational areas, and provide research results to act as a reference for subsequent studies and to assist government authorities and private sector bodies to implement effective management measures.

2. Literature Review

Human beings' involvement in the ecotourism of coastal recreational areas is based on the premise of them being responsible for environmental maintenance. Therefore, firstly, this study systematically reviewed relevant studies and investigated the issues concerning ecotourism, recreational resources, and environmental carrying capacity. This section selected and compared relevant studies according to the ideas and perspectives discovered during the research process and summarized them into two categories for investigation, namely, ecotourism and recreational carrying capacity, as the basis for research model development and empirical analysis.

2.1 Ecotourism

According to the literature review, the concept of ecotourism originated from Hetzer (1970) in 1965. Hetzer found tourism activities caused damage to natural resources, and appealed to people to rethink the relationship among culture, the environment, and tourism, in order to create a new tourism concept to minimize the damage to environmental resources caused by tourism activities, as well as to enable tourists to maximize their satisfaction, which is the earliest origin of the idea of ecological tourism (LaPage, 1963; Lime & Stankey, 1971; Burch, 1984; Shelby & Heberlein, 1984; Andrew, 1999; Dobrica & Vanja, 2007). After the concept of ecological tourism had been proposed, it attracted the attention of many experts and scholars. However, the definition and the meaning of ecotourism are still unclear, including participation, conservation, and interests (LaPage, 1963; Burch, 1984; Coccossis & Mexa, 2004; Bimonte & Punzo, 2005; Loannides et al., 2006; Manning, 2010).

Coastal recreational tourism activities will affect or damage the ecological environment and local residents to a certain extent. Indeed, tourism development has several impacts on the ecological environment: it damages wildlife habitats; introduces exotic dominant species leading to changes in the local flora (Godschalk & Parker, 1975; Odum, 1989; Abernethy, 2001; Oh et al., 2002); damages soil and plants, leading to the gradual disappearance of greenbelts; affects visual landscapes (Odum, 1989; Hof & Lime, 1997; Loannides et al., 2006); leads to the influx of a large number of tourists, creating problems in transportation, food and accommodation, air, water, noise, and garbage processing of tourist attractions; interferes with ecological environment; and creates a burden for conservation (Mathieson & Wall, 1982; May, 1991; Casagrandi & Rinaldi, 2002; Gossling & Hall, 2005; Saarinen, 2006). In terms of economic impacts, the economic benefits of most of the tourist attractions are obtained not by local residents, but by financial groups or immigrants from other places (Khan, 1998; Manning, 2002). Indeed, managers and operators cannot properly provide residents with participation opportunities and give-back initiatives, but instead create a negative social cost, which leads to residents' low cooperation with or rejection of tourism policies (Casagrandi & Rinaldi, 2002; Gossling & Hall, 2005; Saarinen, 2006; Bimonte & Punzo, 2005). Where operators lack the concept of environmental protection, in order to obtain economic benefits, they do not develop well-thought out land planning, and thus their actions lead to ecological damage, an upsurge in land prices, and the expansion of transportation construction. External costs incurred are transferred to the ecological environment and local residents, which results in damage to natural resources and a reduction in the recreational quality (Casagrandi & Rinaldi, 2002; Gossling & Hall, 2005; Mathieson & Wall, 1982; Saarinen, 2006).

In terms of social impacts, a strong cultural invasion and lack of respect for the local culture leads to the sacrifice of natural resources and traditional cultures to obtain economic benefits (Abernethy, 2001; Godschalk & Parker, 1975; Oh et al., 2002; Guerra and Dawson, 2016; Wu and Chen, 2016). In addition, a lack of professional tour guides and planning personnel leads to the failure to implement the actual ecotourism (Loannides et al., 2006), and the intervention of financial groups interferes with the consensus of local residents and affects the direction of the development of ecotourism (May, 1991; Ceballos-Lascurain, 1996; Zacarias et al., 2011; Vinals et al., 2014; Zhang et al., 2015; Wu and Chen, 2016). In terms of the impacts on policy, the lack of a concept of "tourist carrying capacity" may easily cause the consumption of and damage to tourist attractions (May, 1991; Tourism Bureau, 2002; Zhang et al., 2015; Guerra & Dawson, 2016) while the lack of any monitoring mechanism of Ecotourism attractions leads to the failure to accurately evaluate the overall influence of the ecotourism development on tourist attractions (May, 1991; Tourism Bureau, 2002; Vinals et al., 2014; Zhang et al., 2015; Wu & Chen, 2016). Furthermore, the damages to environmental resources and the lack of professional talent result in the dependence on government authorities' proposal of limited management methods, and the

failure to develop an evaluation and grading framework of tourist attractions of ecotourism means managers and operators rarely make any provision for local residents with participation opportunities and proper give-back (Tourism Bureau, 2002; Vinals et al., 2014; Zhang et al., 2015).

2.2 Recreational Carrying Capacity

The concept of carrying capacity was proposed as early as 1936 (LaPage, 1963; Stankey, 1981). Summer (1942) further proposed that, to achieve the purpose of long-term maintenance, the maximum amount of recreational utilization that can be tolerated by a field environment should be termed “recreational saturation point”. After 1960, the term „carrying capacity” was comprehensively applied to leisure and recreation. For example, LaPage (1963) suggested that, during the determination of recreational carrying capacity, it is necessary to take into account two factors – biological carrying capacity and aesthetic recreational carrying capacity. The concept of biological carrying capacity suggests that, during the development and utilization of recreational resources, the volume of use of the natural ecological environment should be maintained without affecting tourists’ satisfactory experiences, while the concept of aesthetic recreational carrying capacity suggests that, during the development and utilization of recreational resources, it is necessary to satisfy most of the tourists to a certain extent. Lime and Stankey (1971) further used the concept of natural science carrying capacity to develop the concept of “recreational carrying capacity.” Andrew (1999) suggested that ecological carrying capacity refers to the maintenance of the maximum number of a species under the conditions of the existing ecological system. Graefe et al. (2011) took into account the differences between human beings and animals to expand the field of recreational carrying capacity and develop a social psychological carrying capacity to facilitate the investigation into the interactive relationship of human beings in a recreational environment and its balance. Dobrica and Vanja (2007) suggested that the definition of tourism carrying capacity can be slightly altered to prevent the occurrence of unacceptable changes or changes that would lead to irreversible consequences for the natural ecological environment and for social, cultural, and economic structures, which may reduce the maximum number of tourists using a space under the premise of recreational experience quality. In other words, environmental carrying capacity can be divided into economic carrying capacity and ecological carrying capacity.

Consideration of the relevant dimensions of carrying capacity has been interpreted as a feasible method for evaluating the level of tourism development that takes into account the environmental, social, and economic characteristics of a location (Clivaz et al., 2004). Although the dimensions concerning carrying capacity have been investigated for many years and have been provided for planners and decision-makers to help them control the over-development of tourism, the difficulties of implementation in individual regional environments and calculations limit their effectiveness. Shelby and Heberlein (1986) summarized the differences in impact parameters proposed by past scholars, and defined four types of recreational carrying capacity that have been comprehensively used to date: (1) ecological carrying capacity; (2) physical carrying capacity; (3) facility carrying capacity; (4) social carrying capacity. The level of influence or change in the amount of recreational use of tourists’ satisfactory experiences is used to analyze the recreational carrying capacity.

For studies investigating the factors affecting recreational carrying capacity, recreational carrying capacity is not only used to calculate the allowable number of tourists in a recreational area, but also has been developed into an indicator for monitoring an area (Stankey et al., 1985; Manning, 2001). The methods for studying recreational carrying capacity include the use of systematic analysis to integrate relevant planning factors, as well as the use of an objective planning method to develop a land-use objective model for a recreational area (Stankey et al., 1985; Manning 2001); the use of the perspective of limits of acceptable change (LAC) to calculate the recreational carrying capacity limits of acceptable change (Shelby & Heberlein, 1984; Hetzer, 1970); the use of fuzzy set theory to deal with the issues of multi-objective planning; and the use of questionnaire survey data to develop a multi-objective planning model or Multi-Criteria Decision Analysis to determine the most appropriate recreational carrying capacity (Conestrelli & Costa, 1991; Pourahmad et al., 2015; Michailidou et al., 2016).

In terms of the identification of factors affecting the ecotourism carrying capacity, Saveriades (2000), McCool and Lime (2001), and Jovicic and Ivanovic (2007) used a literature review to discover the factors affecting recreational carrying capacity, and then used a questionnaire survey to determine the most appropriate carrying capacity. Manning et al. (1996) used the Scenic Beauty Estimation Method or observation method, as well as a questionnaire survey to determine the most appropriate carrying capacity. Chan (1993) and Chu (1998) used a time series to estimate the number of tourists and used a questionnaire survey to evaluate the most appropriate carrying capacity. Jackson (1965) and Miller (1997) used the perception of crowding to investigate social carrying capacity, satisfaction, loyalty, etc. to identify the factors affecting ecotourism carrying capacity while Canestrelli and Costa (1991) used fuzzy linear programming to estimate the most appropriate carrying capacity

for Venice, Italy, and the objective function of the model was the maximization of the number of tourists.

At present, the evaluations on carrying capacity in Taiwan mainly use single ecological or social carrying capacity for investigation and empirical research. The factors affecting the carrying capacity of coastal recreational areas are seldom investigated, and nor are carrying indices developed according to their characteristics as the basis for determining ecotourism carrying capacity. Therefore, this study selected coastal recreational areas as the research targets and used the Delphi-Fuzzy analytic hierarchy process (DFAHP) combining the Delphi method and the FAHP as the research method. This study obtained consensus through the brainstorming of a panel of experts, and then used an expert questionnaire survey to develop the hierarchical structure and to calculate the weight of various critical factors affecting the carrying capacity of ecotourism areas. This study used various evaluation dimensions and the weight of evaluation indices to understand the relationship among various critical factors and their importance.

3. Research Model and Application

3.1 Areas of Empirical Study and Issue Backgrounds

This study selected Qixingtan Coastal Recreational Area as the research object; it extends from DeYan Set Fishnet Fishery in the north to QiLaiBi Lighthouse in the south. The Pacific Coast is to the east, and County Road 193 is to the west at a distance of 10 meters. Qixingtan Coastal Recreational Area mainly includes DeYan Set Fishnet Fishery, (Star Gazing Square, 48 Viewing Deck, and roads and bicycle lanes in the coastal environment, with an area of 896,500m². As shown in Figure 1, Qixingtan is rich in natural landscapes and plant and animal ecology, and has a fixed-net fishing culture with the features of a traditional fishing village; these have become the main tourist resources of this specific area and provide Qixingtan with important recreational value.

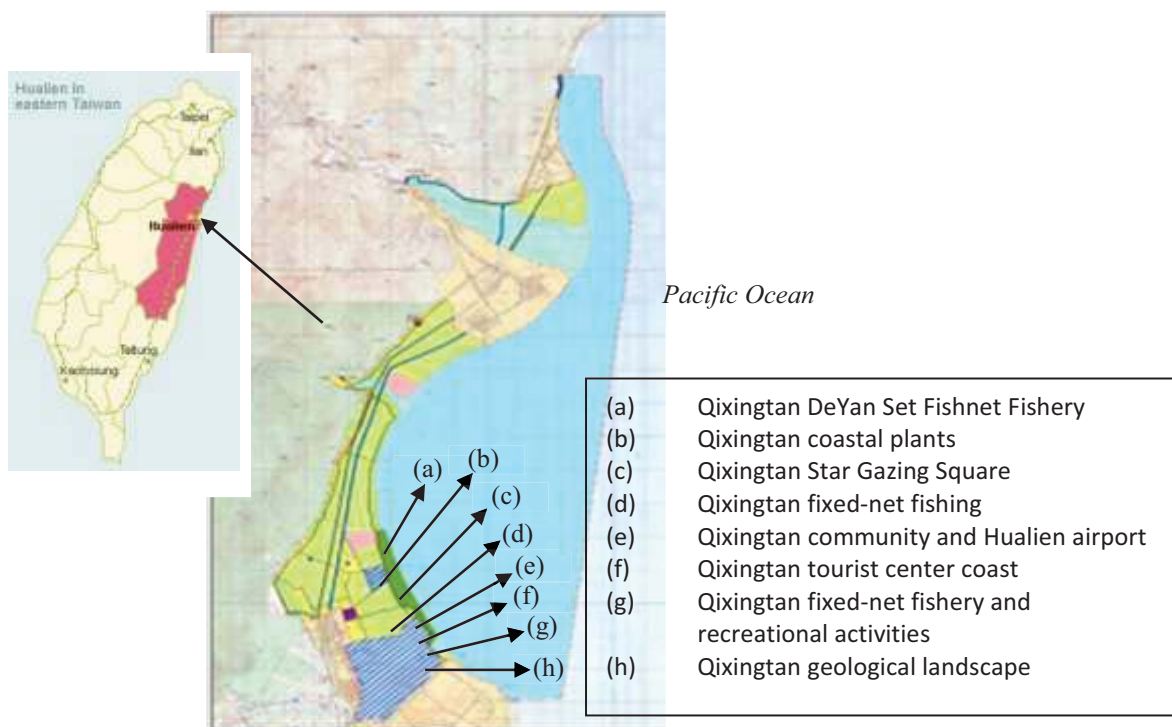


Figure 1. Recreational Resources of Qixingtan Coastal Recreational Area

3.2 Research procedures

Step 1: Decision-making Panel

This study mainly investigated the factors affecting the environmental carrying capacity of coastal recreational areas. Therefore, this study enrolled 5 groups, namely, scholars and experts with backgrounds of tourism, geological landscape, and animals and plants; industry; government authorities; local residents; and tourists; with a total of 25 experts to assist in this study.

Step 2: Delphi Method and Confirmation of Factors Affecting the Carrying Capacity of Coastal Recreational Areas

The questionnaire return rate of the Delphi questionnaire was 100% (25 questionnaires), and all of them were valid. After the questionnaires were returned, this study calculated the mean (M), standard deviation (SD) and consensus deviation index (CDI), and set up the threshold of consensus difference (decision threshold) $\varepsilon=0.3$ as the standard for measuring whether experts reached a consensus.

This study used the following equations, where n denotes the number of rounds of the Delphi survey, h denotes the ordinal number of experts, j denotes the number of the item scored by the experts, and X_{jht} denotes the score. Therefore, \bar{X}_{jt} and S_{jt} are used to denote the score and standard deviation of round n of the Delphi survey of r experts on Item j :

$$\bar{X}_{jt} = \frac{1}{r} \sum_{h=1}^r X_{jht}, \forall j, t \tag{1}$$

$$S_{jt} = \sqrt{\frac{1}{r-1} \sum_{h=1}^r (X_{jht} - \bar{X}_{jt})^2}, \forall j, t \tag{2}$$

The coefficient of variance (CV) could be used as the judgment standard to determine whether the judgments of experts reached a consensus. Therefore, CV_{jt} is used to denote the coefficient of the variance of round n on Item j :

$$CV_{jt} = \frac{S_{jt}}{\bar{X}_{jt}}, \forall j, t \tag{3}$$

The smaller the CV_{jt} is, the smaller the variance in each average score is and the more consistent the opinions of r experts are. Consensus deviation index (CDI):

$$CDI_{jt} = CV_{jt} \frac{\bar{X}_{jt}}{\max_j \{ \bar{X}_{jt} \}}, \forall j, t \tag{4}$$

$$CDI_{jt} = \frac{S_{jt}}{\max_j \{ \bar{X}_{jt} \}}, \forall j, t \tag{5}$$

Step 3: Fuzzy AHP Questionnaire Design and Survey

After the preliminary hierarchy had been developed, because there was a fuzzy space between the dimensions and the indices of the evaluation system, this study used fuzzy theory and AHP to confirm the various factors affecting the carrying capacity of ecotourism areas and their weight. This study adopted expert panel decision-making to use experts' familiarity with the ecological environment of Qixingtian and their professional knowledge to measure the relative level of influence between recreational activities and various substantial factors affecting the ecological environment, as well as the acceptable tourist density. The corresponding triangular fuzzy number of the linguistic scale in this questionnaire survey is shown in Table 1:

Table 1. Evaluation Scale of Fuzzy Analytic Hierarchy Process

Fuzzy number	Linguistic scale	Scale of fuzzy number
$\tilde{1}$	Equally important	(1, 1, 3)
$\tilde{3}$	Slightly important	(1, 3, 5)
$\tilde{5}$	Quite important	(3, 5, 7)
$\tilde{7}$	Extremely important	(5, 7, 9)
$\tilde{9}$	Absolutely important	(7, 9, 9)

Source: Mon, D. L., C. H. Cheng & J. C. Lin. (1994).

Step 4: Fuzzy Pairwise Comparison Matrixes

This study used fuzzy number to denote the values in traditional AHP pairwise comparison matrix as follows:

$$\tilde{a}_{ij} = [L_{ij}, M_{ij}, R_{ij}] \tag{6}$$

$$\tilde{a}_{ij} = 1/\tilde{a}_{ji}, \forall ij = 1,2,\dots,n \tag{7}$$

$$\tilde{A} = [\tilde{a}_{ij}] = \begin{bmatrix} 1 & \tilde{a}_{12} & \dots & \tilde{a}_{1n} \\ 1/\tilde{a}_{12} & 1 & \dots & \tilde{a}_{2n} \\ \vdots & \vdots & \ddots & \vdots \\ 1/\tilde{a}_{1n} & 1/\tilde{a}_{2n} & \dots & 1 \end{bmatrix} \tag{8}$$

L_{ij} : The left value of the triangular fuzzy number during the comparison on relative level of importance between factor i and factor j .

M_{ij} : The middle value of the triangular fuzzy number during the comparison on the relative level of importance between factor i and factor j .

R_{ij} : The right value of the triangular fuzzy number during the comparison on relative level of importance between factor i and factor j .

\tilde{a}_{ij} : The triangular fuzzy number at row i and column j in the fuzzy pairwise comparison matrix.

Step 5: Integration of Experts' Opinions

This study divided the subjects into five groups: scholars and experts, industry, government authorities, local residents, and tourists. The evaluation of experts or various expert panels on different dimensions or criteria might not be the same, and there were differences in the perception of scale of the fuzzy number for evaluating semantics. To avoid attaching too much importance to the opinions of a certain group, the judgments of every expert had to pass the consistency test. Afterwards, the opinions of the expert panel were integrated. This study adopted the geometric mean recommended by Saaty (1990) to integrate the judgments and opinions of r experts. The equation is as follows:

$$\tilde{A} = (\tilde{a}_{ij}) \tag{9}$$

$$\tilde{a}_{ij} = \left(\prod_{h=1}^r \tilde{a}_{ij}^h \right)^{1/r}, i, j = 1, 2, \dots, n \tag{10}$$

Step 6: Calculation of Fuzzy Weight

This study used the vector geometric mean to calculate the fuzzy weight of each evaluation criterion \tilde{w}_i , because this method can increase the accuracy and consistency of the evaluation criteria (Buckley, 1985). The equation of $\tilde{w}_i = (W_iL, W_iM, W_iU)$ is as follows:

$$\tilde{w}_i = \frac{\left(\prod_{j=1}^n \tilde{a}_{ij} \right)^{1/n}}{\sum_{i=1}^n \left(\prod_{j=1}^n \tilde{a}_{ij} \right)^{1/n}}; i, j = 1, 2, \dots, n \tag{11}$$

$$\tilde{w}_i = \begin{bmatrix} \tilde{w}_1 \\ \tilde{w}_2 \\ \vdots \\ \tilde{w}_n \end{bmatrix} \tag{12}$$

\tilde{w}_i : denoted the weight of criterion i in the fuzzy pairwise comparison matrix, and $i=1, 2, \dots, n$; \tilde{a}_{ij} was pairwise comparison matrix.

Step 7: Calculation of maximum eigenvalue

The calculation of maximum eigenvalue is as follows:

$$\tilde{A} \otimes \tilde{w}_i = \tilde{w}_i \tag{13}$$

$$\tilde{\lambda}_{\max} = \sum_{i=1}^n \frac{\tilde{w}_i}{n\tilde{w}_i} \tag{14}$$

Step 8: Defuzzification

A fuzzy number is not a specific value, and it cannot be directly used for scheme comparison. Therefore, a fuzzy value has to be defuzzified to convert a fuzzy set into a specific value. The common defuzzification methods include Center of Gravity Defuzzification, Center of Sum Defuzzification, Center of Largest Area Defuzzification, and First of Maximum Defuzzification. Center of Gravity Defuzzification is the most common and most rational method, but the calculations are more cumbersome. Center of Sum Defuzzification is also rational. However, the calculations simpler than those of the former one. This study adopted the Center of Gravity Defuzzification proposed by Klir and Yuan (1995). The equation is as follows:

$$DW_i = [(W_iR - W_iL) + (W_iM - W_iL)]/3 + W_iL \tag{15}$$

Step 9: Normalization

After the defuzzification, the sum of the weight of each evaluation criterion was not equal to 1, but was close to 1. The defuzzified weight had to be normalized. The equation is as follows:

$$NW_i = \frac{DW_i}{\sum_{i=1}^n DW_i} \tag{16}$$

Step 10: Consistency Test

The order of factors was determined according to pairwise comparison. Comparisons and judgments made by experts might not be consistent, which would lead to differences in the order. Therefore, Saaty (1980) suggested the use of a Consistency Index (CI) and Consistency Ration (CR) to test whether the evaluation results are consistent. Thus, if the questionnaire result did not pass the consistency test, the questionnaires would be viewed as invalid ones.

(1) CI

$$CI = (\lambda_{\max} - n) / (n-1) \tag{17}$$

If $CI \leq 0.1$, the weight was consistent. If $CI = 0$, the judgment of the relative level of importance of n factors under a single criterion was consistent. If $CI > 0$, the former judgement and latter judgement of experts were not consistent, and experts had to be requested to revise their judgements. Saaty (1990) suggested that it is preferable that $CI < 0.1$.

(2) CR

$$CR = CI / RI \tag{18}$$

If $CR \leq 0.1$, the consistency was satisfactory. CR is the ratio of CI to the Random Index (RI). RI is a consistency coefficient randomly generated from the matrix. The RI value is associated with the matrix coefficient. The corresponding RI values can be found in Table 2.

Table 2. Random Index

Number of Hierarchies (n)	1	2	3	4	5	6	7	8	9	10
RI value	0.00	0.00	0.58	0.90	1.12	1.24	1.32	1.41	1.45	1.49

Source: Saaty (1990), Decision Making for Leaders, p.84.

4. Results and Discussion

4.1 Sample Attributes

This study mainly investigated the factors affecting the environmental carrying capacity of coastal recreational areas. To achieve comprehensiveness of the expert panel samples, this study enrolled five groups, namely, scholars and experts with backgrounds in tourism, geological landscape, and animal and plants; industry; government authorities; local residents, and tourists; with a total of 25 experts to assist in this study. The questionnaire return rate was 100%. The returned questionnaires all passed the consistency test and were valid questionnaires.

4.2 Development of Evaluation Hierarchy for Environmental Carrying Capacity of Coastal Recreational Areas

This study used a literature review, expert interviews, and a Delphi survey to summarize the dimensions and

factors affecting ecological environments. Because there is a fuzzy space between the dimensions and the indices of the evaluation system, this study used FAHP to confirm the various factors affecting the carrying capacity of ecotourism areas and their weight. After the questionnaire survey and modification, this study eventually obtained four primary evaluation factors: “recreational environment D_1 ,” “natural landscape D_2 ,” “coastal animals and plants D_3 ,” and “cultural assets D_4 ,” as well as 13 secondary factors, such as “public infrastructure C_1 ,” as shown in Figure 2.

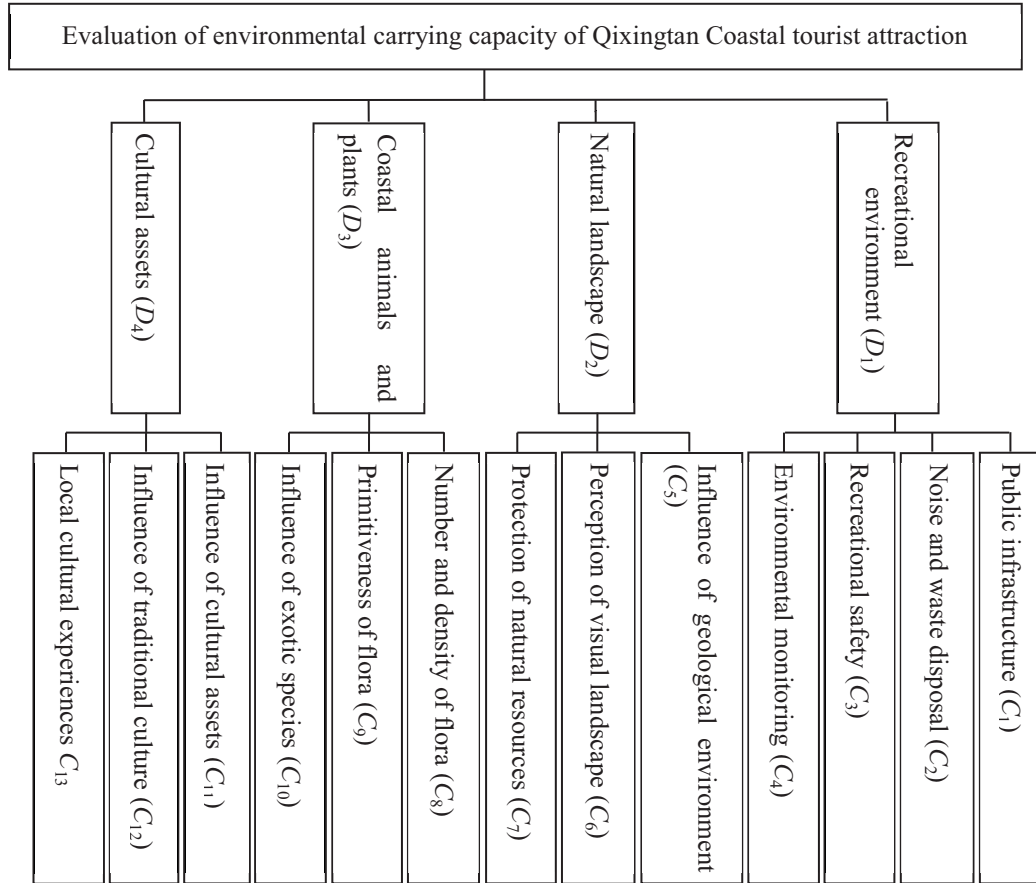


Figure 2. Evaluation Hierarchy for Environmental Carrying Capacity of Qixingtan Coastal Recreational Area

4.3 Weight of Various Factors Affecting Ecological Environment

This study integrated fuzzy theory into the expert questionnaire, and used face-to-face interviews and emails to confirm the evaluation factors and to distribute questionnaires. For the returned questionnaires, this study used Eqs. (6)-(14) to perform a consistency test on each subject’s weight of evaluation criteria. To see if the evaluation criteria passed the consistency test, this study used a fuzzy analytic hierarchy to calculate the weight and order of the various factors affecting the ecological environment, as shown in Tables 3.

Table 3. Overall Weight and Order of Qixingtan Coastal Recreational Area’s Recreational Carrying Capacity

Primary factors	Fuzzy weight	Normalized weight	Order	Secondary factors	Fuzzy weight	Normalized weight	Overall weight	Order
Recreational environment (D ₁)	(0.091995,0.1874 29,0.499251)	0.2078	3	Public infrastructure (C ₁)	(0.087811,0.1738 93,0.464463)	0.1915	0.0397	12
				Noise and waste disposal (C ₂)	(0.113801,0.2581 76,0.657724)	0.2715	0.0564	10
				Recreational safety (C ₃)	(0.140714,0.36652,0.80508)	0.3461	0.0719	6
				Environmental monitoring (C ₄)	(0.071747,0.2093 97,0.442841)	0.1909	0.0396	13
Natural landscape (D ₂)	(0.160456,0.3502 73,0.840259)	0.3605	1	Influence of geological environment (C ₅)	(0.745646,1.4244 98,3.335919)	0.3911	0.1409	1
				Perception of visual landscape (C ₆)	(0.475512,0.9370 01,2.292167)	0.2631	0.0948	4
				Protection of natural resources (C ₇)	(0.596785,1.4643 44,2.807552)	0.3458	0.1246	2
Coastal animals and plants (D ₃)	(0.106902,0.2619 12,0.584169)	0.2543	2	Number and density of flora (C ₈)	(0.133405,0.2850 58,0.679004)	0.2900	0.0737	5
				Primitiveness of flora (C ₉)	(0.204771,0.4826 13,1.044069)	0.4575	0.1163	3
				Influence of exotic species (C ₁₀)	(0.113079,0.2653 04,0.577415)	0.2525	0.0642	8
Cultural assets (D ₄)	(0.072526,0.2003 86,0.391782)	0.1774	4	Influence of cultural assets (C ₁₁)	(0.152739,0.308214,0.83507)	0.3444	0.0610	9
				Influence of traditional culture (C ₁₂)	(0.164277,0.3808 59,0.891357)	0.3818	0.0677	7
				Local cultural experiences (C ₁₃)	(0.1114,0.310927,0.607757)	0.2738	0.0485	11

5. Conclusion

Although the application of the carrying capacity concept is a tool for measuring human activities and environmental management, it retains a high quality and quantity of coastal resources. It not only takes into account the current needs, but also ensures long-term economic and ecological benefits. This study used studies concerning ecotourism and carrying capacity, a Delphi survey, and FAHP to identify the critical factors affecting the carrying capacity of recreational areas, including 4 primary factors and 13 secondary factors.

This study found that the order of weight of primary factors affecting Hualien Qixingtan coastal recreational area’s recreational carrying capacity was natural landscape (0.3605), coastal animals and plants (0.2543), recreational environment (0.2078), and cultural assets (0.1774). For the secondary factors, the top five overall weights were influence of geological environment (0.1409), protection of natural resources (0.1246), primitiveness of flora (0.1163), perception of visual landscape (0.0948), and number and density of flora (0.0737). The research results can be provided as a reference for relevant government authorities, managers, and operators to develop measures giving consideration to both the resource conservation and the recreational management of coastal recreational areas.

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Style Investing with Machine Learning

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Abstract

This paper applies machine learning techniques to style investing. Support Vector Regression is applied to multi-factor investing based on momentum, dividend, quality, volatility and growth. The results show that Support Vector Regression selects stocks consistently with a higher efficiency ratio than a broad market investment and outperforms linear regression methods. The methods are applied to global stocks in the MSCI World index between 1996 and 2016. The behavior of both models is analyzed for economic sectors and over time. Interestingly, factors like low-volatility and momentum contribute both positively and negatively in some economic sectors and certain time periods.

JEL classification: G10, G11, G14, G15

Keywords: hedge funds; machine learning; factor models; style investing

1. Introduction

Style investing has been studied extensively in equity markets at least since Fama and French (1992). For this approach, stocks from a broad index are grouped together with similar characteristics. Fama and French (1992) combine two styles, value and size, to capture the cross-sectional variation in average stock returns. The list of factors has been extended over the past. Jegadeesh and Titman (1993) show that buying stocks that performed well in the past generate significant outperformance over the broad index. Ang et al. (2006) and Li et al. (2016) find that stocks with high idiosyncratic volatility have low average returns.

Although the amount and explicit factor for an optimal solution remains under research, this paper focuses on growth, momentum, quality, volatility and dividend factors. Asness et al. (2015) showed that these variables have success in asset pricing. They have the advantage of a strong economic intuition and track record of producing long-term positive returns. The factors can also be traded long and short to extract the risk premium from the market and to produce uncorrelated returns to long-only asset classes. This paper excludes common factors like size and illiquidity, which show a smaller premium and are less scalable.

Investing in these factors is referred to as style investing (Asness et al., 2015). One way of investing is to sort stocks according to their factor values. This univariate sorting procedure (see e. g. Fama & French, 1993) buys the stocks with the highest factor values and sells the stocks with the lowest factor values. Combining several styles on the same set of stocks would lead to offsetting trades on some stocks and aggregating long or short trades on other stocks.

Another way of investing applies multivariate regression to style investing (e. g. Haugen & Baker, 1996; Hanna & Ready, 2005; Fama & French, 2008; Lewellen, 2014). This approach regularly calculates a regression between factor values and future stock returns. The stocks are sorted with their factor values multiplied with the regression coefficients. Both procedures can be repeated over time and scaled to a target volatility.

This paper applies machine learning to style investing. Machine learning has been very successful in various fields such as search engines and computer vision. We apply machine learning to find an optimal combination between the different styles instead of applying a univariate sorting procedure or simple regression. In particular, we apply Support Vector Machines (SVM) (Cortes & Vapnik, 1995), which are among the most widely used algorithms in machine learning.

We compare our results with linear regression models similar to Novy-Marx (2013) and Fama and French (2015).

These regression models use month-by-month multivariate cross-sectional regressions of key stock characteristics. We apply the Support Vector Machines with the same logic and then compare the performance of each approach.

In this paper we do not focus on factor selection or adding new factors. However, we will provide some insights on how the impact of factors is changing over time and especially in different economic sectors. Therefore, we build the linear and SVM regression for each economic sector separately and repeatedly. We extract factor values for each stock and train both the linear and SVM regression in a single economic sector. As a result we retrieve models for each economic sector that are changing their weights to each factor over time. With this approach, we receive detailed insights, how each of the different factors impacts the performance of stocks over time and in different sectors.

This paper adds to the growing literature of style investing, by applying machine learning models. We compare the behavior of these novel techniques in the setting of well-described linear methods. This paper discusses the combination, but not the timing of factor styles. The regression models weigh the different factors differently over time, but factors are not excluded at any point in time. Of course, training the regression and machine learning models, the factors change their sign in some sectors and at some points in time. These factor rotations can be easily explained, for example, by the technology bubble in 2000, where growth was favored over value in the technology sector. These rotations are learned by the models and reflected in the weighting of factors.

2. Data

We select all stocks from the MSCI World between 07/31/1996 and 06/30/2016 (total of 3506 stocks). For these stocks, we download daily data shown in Table 1 from Bloomberg. All data is downloaded in USD.¹ The total amount of data is 150 million data points including the weight of each stock in the MSCI World index. After downloading, the data is reduced to end of week data for further analysis² and the fundamental data (dividend, growth and quality factors) is lagged over 6 months to ensure the data is available at the time of trading.

Table 1. Name and Description of input factors used for modelling future returns

Name	Bloomberg field	Bloomberg field definition	Short name
Price	cumulative_tot_return_gross_dvds	“One day total return as of today. The start date is one day prior to the end date (as of date). Gross dividends are used.”	P
Dividend	eqy_dvd_yld_12m	“Sum of gross dividend per share amounts that have gone ex-dividend over the prior 12 months, divided by the current stock price. Gross and Net Dividend amounts are assumed to be the same when only one is reported. All Cash Dividend Types are included in this yield calculation.”	DVD
Momentum	cum_tot_ret_6m	6-month total return calculated from the price above. ³	MOM
Growth	px_to_book_ratio	“Ratio of the stock price to the book value per share. Calculated as: Price to Book Ratio = Last Price / Book Value Per Share.”	PB
Quality	return_com_eqy	“Measure of a corporation's profitability by revealing how much profit a company generates with the money shareholders have invested, in percentage. Calculated as: (T12 Net Income Available for Common Shareholders / Average Total Common Equity) * 100.”	ROE
Volatility	volatility_260d	“A measure of the risk of price moves for a security calculated from the standard deviation of day to day logarithmic historical price changes. The 260-day price volatility equals the annualized standard deviation of the relative price change for the 260 most recent trading days closing price, expressed as a percentage. When looking at current value, the last price point will be the most recently traded price of the security.”	VOL

After downloading the data, the data is separated for each sector and vectorized. The machine learning methods

¹The currency setting impacts the price, momentum and volatility data, but has no impact on dividends, growth and quality values.

²The last day of the week was chosen as Friday. If the data is not available on Friday, then the data was chosen from the last available day of the week unless no data was available for the whole week.

³Bloomberg does not supply this field and we calculated this value from the price field

below are agnostic to the time dimension and consider every data point separately. However, each data point can integrate information about past performance such as the momentum indicator above.

The data is analyzed separately for each economic sector. We use the Bloomberg Industry Classification System level I to attribute stocks to economic sectors.

To train the models, each data point was labelled with the one month future return of the stock, because we want to rebalance the portfolio on a monthly basis and select the best performing stocks for this period.

3. Models

First, we utilize a linear prediction model and perform a multiple linear regression to model the relationship between input factors (see table above) and predicted returns r of the corresponding stock i at time $t+1$ month:

$$r_{i,t+1} = \alpha + \beta_{1,t}DVD_{i,t} + \beta_{2,t}MOM_{i,t} + \beta_{3,t}PB_{i,t} + \beta_{4,t}ROE_{i,t} + \beta_{5,t}VOL_{i,t}$$

The linear model considers an intercept α and linear terms β for each predictor, which in our case comprise of the five input factors discussed above.

Secondly, we train a support vector regression (SVR) model. SVR models are part of kernel techniques that transform the feature space with a kernel and then perform a maximum margin classification. With the Gaussian kernel G the similarity between data points X and the support vectors decreases exponentially. The steepness is controlled by the parameter σ , which we kept at 1.

$$G(X, \sigma) = \frac{1}{(\sqrt{2\pi}\sigma)^5} e^{-\frac{|X|^2}{2\sigma^2}}, X = \begin{pmatrix} DVD_{i,t} \\ MOM_{i,t} \\ PB_{i,t} \\ ROE_{i,t} \\ VOL_{i,t} \end{pmatrix}$$

The goal of the method is to find a function that deviates no more than epsilon for each training point and is at the same time as flat as possible. Two parameters, epsilon and c control this trade-off, which are chosen depending on the variance of the output variable. To penalize misclassifications, SVR impose a cost c for observations outside the epsilon margin. The box constraint was kept at the interquartile range of the future performance in the training set.

The epsilon parameter helps toward a flat function by noise reduction as SVR methods ignore errors in the bandwidth of epsilon. We kept epsilon at the interquartile range of the future performance in the training set.

4. Results (Quintile)

In our first test, the model is trained on 80% of the data and tested on the remaining 20% of the data for each cross-validation. The data is randomly selected over time points and stocks for the training or test data set.

The results are divided into two periods. One period comprises the data between 07/31/1996 and 07/31/2006, and the other the data between 07/31/2006 and 06/30/2016.

The trained models predict the return over the next month for each data point in the test set. These predicted returns are sorted for each sector into quintiles from the lowest predicted returns $\hat{\mu}_{1,\min}$ to the highest predicted returns $\hat{\mu}_{10,\max}$.

Our null hypothesis is that the actual average return of the lowest quintile $\mu_{1,\min}$ is higher than in the highest quintile $\mu_{5,\max}$:

$$H0: \mu_{5,\max} \leq \mu_{1,\min}$$

To test our hypothesis, we use a two-sample t-test to test the alternative hypothesis that the population mean of $\mu_{1,\min}$ is less than the population mean of $\mu_{5,\max}$:

$$H1: \mu_{5,\max} > \mu_{1,\min}$$

For this analysis, the significance level is set to 5% and the test performed for each sector, two time periods and 1000 random selected cross-validations for bootstrapping (Efron, 1979). The advantage of this approach is repeated testing of our methods in order to estimate confidence intervals of our results.

We find that the SVR always significantly separates the highest and lowest quintile correctly across sectors, time and cross-validations, whereas the linear models fails in some sectors and especially in the more recent time frame (see Appendix A).

Table 2 shows the average efficiency rate of each quintile averaged over sectors and 1000 cross-validations. For both models, the average performance is monotonously increasing in both time periods. However, the SVR model improves the efficiency of the linear model dramatically. The linear model achieves an efficiency of 0.79 in the highest quintile and the earlier time period. This resembles other results nicely such as Fama and French (2008). Interestingly, the SVR improves the efficiency to 1.28 in the highest quintile and same time period.

Additionally, the SVR increases the difference in efficiency between the highest and lowest quintile. The difference is interesting for the implementation of long and short trades. With the linear model, the difference in efficiency between the highest and lowest quintile is 0.63 in the later time period. The SVR model more than doubles the difference in efficiency to 1.71.

Table 2. Average efficiency rates of the linear versus the SVR model for different quintiles and time periods

		Quintile				
		1	2	3	4	5
Linear model	07/31/1996 to 07/31/2006	0.07	0.18	0.35	0.57	0.79
	07/31/2006 to 06/30/2016	-0.10	0.11	0.26	0.44	0.53
SVR model	07/31/1996 to 07/31/2006	-0.46	0.09	0.33	0.65	1.28
	07/31/2006 to 06/30/2016	-0.57	-0.12	0.25	0.56	1.14

Table 3 shows the average t-statistics in both periods for the linear model. The t-statistics are calculated for a test that the coefficient is zero and are averaged for each sector over 1000 cross-validations. In general, the factors contribute to the sector models as expected from the literature (e.g. Asness et al., 2015). High Dividend yields, high momentum and high quality contribute positively to the future performance of stocks. On the other hand, high growth (low value) and high volatility contribute negatively.

To test the significance of the t-statistics, we calculate confidence intervals [0.025, 0.975] for each sector and period over 1000 cross-validations as suggested by Hall (1988). Significant values are indicated with * in Table 3. Interestingly, the t-statistics show strong significance for the volatility indicator in both periods and across sectors as expected from other research such as Li (2016).

The dividend, growth and quality indicators remain at similar average values of 2.26, -1.33 and 1.26 across the periods. Only the momentum indicator shifts from a slightly negative average t-statistic to a positive t-statistic. This indicates that in the period between 1996 and 2006, mean reversion has dominated the next month return in some sectors, but this changed dramatically to momentum in the period between 2006 and 2016.

The factor contribution varies widely between the different sectors. For example, basic materials stocks are driven by high dividends and high momentum, whereas financial stocks are driven by low volatility.

Table 3. Average t-statistics of the linear regression model for two time periods

	07/31/1996 to 07/31/2006					07/31/2006 to 06/30/2016				
	Dividend	Momentum	Growth	Quality	Volatility	Dividend	Momentum	Growth	Quality	Volatility
Basic Materials	4.88*	2.63*	-2.92*	0.67	-3.36*	1.76	5.36*	-1.38	1.78	-4.57*
Communications	7.15*	-4.42*	-1.75*	2.92*	-7.91*	-0.44	4.84*	-2.42*	-0.01	-2.90*
Consumer, Cyclical	5.00*	-1.46*	-0.38	0.53	-7.89*	3.21*	9.02*	-0.14	-0.31	-1.95
Consumer, Non-cyclical	4.18*	0.89	-4.60*	5.43*	-8.49*	2.77	6.40*	0.90	0.79	-5.85*
Diversified	3.29*	-0.63	-1.49*	2.61*	-2.76*	-1.11	1.64	-2.58*	1.95	-0.03
Energy	2.92*	-0.44	0.52	2.91*	-8.09*	1.64	4.89*	3.21*	-1.27	-2.16
Financial	0.67	-1.82*	-0.37	-1.25*	-15.83*	1.05	8.50*	-2.92*	0.73	-3.93*
Industrials	1.33	-0.04	-2.78*	0.15	-12.16*	0.16	7.51*	-0.50	2.58*	-3.46*
Technology	0.68	1.30	-3.05*	2.88*	-1.87*	0.56	3.21*	-1.60	1.87	-1.44
Utilities	3.21*	1.48	-0.67	-0.13	-7.8*	2.25*	4.67*	-1.57	0.34	-3.18*

The SVR model does not depend on single coefficients such as the linear model, but rather on a function of the input variables. This function is defined by the Gaussian Kernel, which limits the non-linearity of the response. In comparison to the linear model, the SVR model disregards extreme factor values and does not respond to them. For example, the most recent SVR model (trained on 01/01/2016) does not respond to price-to-book values above five in the utility sector. For other values, the SVR model responds similar to the linear model. In particular, the SVR model shows clear positive dependency on dividends, momentum and quality as well as negative dependency on volatility and growth (see Appendix B).

5. Results (Rolling)

For the second test, we train the linear and SVR models over a rolling period of time and then use the model to build the portfolio in the next period. Again we use all stocks in the MSCI World between 07/31/1996 and

06/30/2016. The advantage of this test is that the training data is strictly in the past.

For this test, both models are trained based on weekly data over the past five years and then retrained at the end of every year.⁴ Each month, the stocks are sorted into five bins and bought with an equal weight.

The results of the highest quintile are shown Table 4 for the linear and SVR models. The results are shown for each sector and for the combined strategy⁵ as well as the equal weighted MSCI World Index. All returns are calculated as total return including gross dividends. Note that the returns are not scaled, but the portfolios are equally weighted between the selected stocks and fully invested.

Table 4. Statistics of the rolling linear and SVR models for each sector, the combined strategy (equal weighted) and the MSCI World Index (equal weighted) based on daily data between 01/01/1996 to 06/30/16

	Materials	Communication	Consumer, Cyclical	Consumer, Non-cyclical	Energy	Financial	Industrials	Technology	Utilities	Combined	MSCI World TR Index (equal weighted)
Linear model											
Annual Mean	0.11	0.15	0.09	0.11	0.12	0.11	0.12	0.13	0.10	0.12	0.09
Annual Vol	0.22	0.20	0.14	0.14	0.28	0.21	0.15	0.26	0.16	0.14	0.15
Eff. Ratio	0.49	0.78	0.64	0.81	0.43	0.52	0.81	0.49	0.66	0.82	0.62
Min Day	-0.09	-0.09	-0.06	-0.06	-0.15	-0.12	-0.06	-0.10	-0.11	-0.06	-0.06
Max Day	0.14	0.13	0.08	0.09	0.14	0.17	0.07	0.30	0.13	0.07	0.07
Skew	0.39	0.36	0.01	-0.07	-0.22	0.81	-0.15	1.43	0.31	-0.23	-0.24
Kurt	11.79	9.34	8.32	10.41	11.50	28.64	7.77	30.97	22.70	9.79	10.03
Max. Drawdown	0.61	0.61	0.43	0.40	0.70	0.70	0.44	0.86	0.29	0.42	0.56
SVR model											
Annual Mean	0.11	0.09	0.10	0.14	0.14	0.10	0.12	0.09	0.10	0.11	0.09
Annual Vol	0.22	0.23	0.19	0.15	0.26	0.20	0.20	0.32	0.16	0.15	0.15
Eff. Ratio	0.49	0.41	0.54	0.93	0.55	0.50	0.63	0.28	0.62	0.72	0.62
Min Day	-0.12	-0.09	-0.08	-0.08	-0.13	-0.09	-0.09	-0.23	-0.07	-0.06	-0.06
Max Day	0.10	0.08	0.12	0.08	0.15	0.10	0.10	0.14	0.08	0.07	0.07
Skew	-0.00	-0.14	0.14	-0.05	-0.18	0.15	-0.01	0.01	-0.23	-0.21	-0.24
Kurt	9.29	7.16	9.88	11.00	8.29	11.51	7.92	12.10	8.07	9.14	10.03
Max. Drawdown	0.62	0.83	0.65	0.54	0.58	0.69	0.57	0.90	0.39	0.52	0.56

The combined strategy equally weights the return of the highest quintile of stocks in each sector and is rebalanced on a monthly basis. This strategy improves the efficiency to 0.82 from 0.62 in the MSCI World Index (equal weighted) with the linear model and to 0.72 with the SVR model. Both models also reduce the skew, kurtosis and maximum drawdown of a global equity investment. The SVR underperforms the linear model in this analysis, but still outperforms the MSCI World TR Index. In particular, the SVR underperforms in the communications sector, but outperforms the linear model in the energy and the non-cyclical consumer sector.

We also analyze the performance of the other quintiles. Selecting the other quintiles result in an efficiency ratio of 0.42 in the lowest quintile with the linear model, which increase monotonously to the highest quintile. Using the SVR model shows similar results.

We analyze the coefficients of the linear model between 2006 and 2015 in more detail (see Appendix C). As expected from our earlier analysis, quality and dividend receive positive factor loadings over time and sectors, while growth (value) receives a negative (positive) loading. Quality receives the most persistent positive loading for stocks from the cyclical consumer sector. Dividend loadings are extremely important in the basic material sector. Growth (Value) is very consistently loaded negatively (positively) for utility stocks.

Interestingly, volatility receives a positive loading in this period and momentum a negative one over the last decade. This is quite the opposite of our first result, but can be explained with the different training periods. The rolling models depend on the very recent five years of data, whereas the first model is trained on the past 10 years. Therefore, bear markets such as in 2000-2002 and 2008 are reflected differently in the machine learning models.

⁴With an expanding window in the first five years.

⁵The diversified sector was excluded from this analysis, as only few stocks exist in this category.

Li et al. (2016) and Jegadeesh and Titman (1993) show that low-volatility and positive momentum, respectively, are associated with above average returns. Interestingly, we find the opposite in recent years. Above average returns of the linear model in recent years are rather associated with high-volatility and negative momentum, especially in the communication and technology sector. However, we train the machine learning models on a rolling basis and do not control for collinearity of the input factors. In other words, the models are trained over very different time frames such as bull and bear markets and the different factors might be offsetting each other. For example, high-volatility adds value to the selection of stocks in the communications sector, if the stock shows strong fundamentals otherwise.

6. Discussion

This article applies machine learning to style investing. Style investing has proven to be very successful in recent years and can be improved further with machine learning. Style investing selects stocks not only depending on their market capitalization, but also depending on other factors. We use dividends, momentum, growth, quality and volatility similar to Asness et al. (2015). The fundamental factors are lagged with 6 months to limit data snooping. The proposed machine learning approach learns the efficiency of the factors and weights the stocks in the portfolio accordingly. This approach is easily extendable to other factors and other machine learning methods.

In our first application, we train the machine learning models across time. In other words, the approach neglects the time structure in the training and test data set. Different time points are attributed to each set in a random fashion. As a result, future returns of the training data are overlapping with future returns of the test set. Therefore, the highest quintile of predicted returns might only refer to a certain time period, where the prediction worked well. To measure this overlapping effect of our machine learning models, we test the machine learning models over rolling time periods as well. In this test, the training data is strictly in the past. Interestingly, both analyses show a high outperformance to the equal weighted MSCI World TR Index.⁶

Further research might improve the collinearity of the input factors by applying, for example, a principal component analyses. Arnott et al. (2016) showed that several factor-based strategies, such as momentum, quality or volatility in fact depend on the value factor. We chose to analyze simple factors that are common in the literature instead of building more complex features as input to non-linear models. Another way to build these complex factor combinations would be an application of deep learning techniques that stack several neural networks. The input factors to such a technique could be even more rudimentary data such as balance sheet data which the first layer of a deep network is built from.

Of course, a Sharpe ratio in a long only portfolio above 1 is difficult to achieve in practice. In this article, the Sharpe ratio is based on gross returns, end-of-day data and monthly rebalancing. Trading costs and fees are not included in our analysis. However, Frazzini et al. (2013) show that style trading survives trading costs even at large fund sizes and turnover above 100% per month (in and out) for some strategies. The average turnover in this paper is around 20% per month as the scores are calculated over a large set of data points. Also, this paper only considers the largest and most liquid stocks in global equity markets. Only stocks from the MSCI World index are selected each year.

Most significantly, we find that the input factors contribute differently to the machine learning models in different sectors. Both the linear and SVR model are trained for each economic sector repeatedly. For example, models for financial stocks are driven repeatedly by low volatility, whereas cyclical consumer stocks on momentum. Further research is necessary to analyze the different efficiency of input factor in each economic sector. We find that the contribution of the input factors changes over time and even change their sign in some sectors.

To train the relationship between input factors and future stock performance, we apply both a linear and a Support Vector Regression (SVR) model. The results of the linear model compare nicely to other publications such as Fama and French (2008). Interestingly, the SVR model doubles the efficiency of the linear model in the highest quintile to 1.21. In this article, the SVR model applies standard parameters and a Gaussian Kernel. The standard parameters can be optimized with an in-sample cross-validation procedure to improve results. The choice of a Gaussian Kernel drives the non-linear regression and can be easily extended to other Kernels in the future.

⁶In both analyses, the stocks from the highest quintile of multi-factor scores were selected and equal weighted.

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Appendix A

Cross-validation and Bootstrapping

For our first analysis, we partition the data into training and test sets to analyze robustness and out-of-sample performance of the models. The k-fold cross-validation procedure divides the observations into k disjoint subsamples (or folds) from n data points, chosen randomly but with approximately equal size. We chose k as 5, to balance training on 80% of the data and test set on 20% of the data. The 20% of data points in the test set are then labelled by the machine learning models with the predicted future return and sorted into quintiles.

5-fold cross-validation leads to five different test sets to test the robustness of the model. On each test set our hypothesis is tested. To boost the number of tests, we also perform a bootstrapping technique to increase the test set to 1000 (see Efron, 1979). For bootstrapping, we randomly sample the training and test set with replacement. This technique allows our hypothesis to be tested for 1000 times and generate a more detailed estimate. Both methods operate on 20% of the data for testing and strictly separate training data. Since the 5-fold cross-validation is limited to 5 different test sets, we chose bootstrapping to evaluate the bias due to sampling and test the robustness of our model parameters.

The two-sample t-test is performed separately for the two different time periods and for the different sectors. Also, the test is performed five times, for the 5-fold cross-validation and 1000 times for the bootstrapped method. The Table A1 shows the percent of cross-validations the H0 is rejected for both cross-validation methods. The table also shows the number of data points in the test sample in each quintile.⁷

Table A1. Significance test for the linear model

	07/31/1996 to 07/31/2006			07/31/2006 to 06/30/2016		
	5-fold cross-validation	Bootstrapped	Sample size	5-fold cross-validation	Bootstrapped	Sample size
Basic Materials	100%	98%	425	80%	79%	356
Communications	100%	100%	317	80%	76%	233
Consumer, Cyclical	100%	99%	712	100%	99%	551
Consumer, Non-cyclical	100%	100%	721	100%	96%	571
Diversified	60%	60%	76	30%	27%	58
Energy	100%	100%	188	70%	69%	186
Financial	100%	100%	838	100%	98%	661
Industrials	100%	100%	811	100%	97%	721
Technology	50%	46%	156	30%	34%	101
Utilities	90%	94%	278	80%	79%	181

Note. Percent of cross-validations the H0 is rejected at the 5% level and the number of data points in the test sample per quintile for the two different periods. The percentage is reported both for the 5-fold cross-validations and the bootstrapped method.

The results for the 5-fold cross-validation and the bootstrapped method are very similar. For both methods, the table shows that the linear model is very successful and stable in separating the best performing from the worst performing quintiles of stocks. For example in the utilities sector during the period 1996 to 2006, in 94 out of 100 bootstrapped cross-validations the selected stocks in the highest bucket were performing significantly better than the selected stocks in the lowest bucket over the next month. Since the 5-fold cross-validation is a random selection, it returns different results for each repetition. The bootstrapping method is giving a more detailed and replicable measure of the test.

In both periods, the cross-validation only drops in the diversified and technology sectors. These are also the two sectors that have the least data to fill the different buckets. Especially for the diversified sector, the data set only comprises 58 data points for each of the five buckets in the period 07/31/2006 to 06/30/2016.

We perform the same test for the Support Vector Regression (SVR) model (see Table A2). The results show that the SVR model is outperforming the linear model by far. The SVR always separates the highest and lowest quintile significantly across sectors, time and cross-validation techniques for the same data set as the linear model.

⁷The sample size is defined as 20% of the total data points in a sector in each time period and then divided by 10 buckets. For example, the total number of data points in Basic Materials was 21,250. Out of these 17,000 were used for training of the model and 4250 were used for testing. For the test sample, the model predicted future returns and these were then aggregated to buckets of 425 data points.

Table A2. Significance test for the Support Vector Regression (SVR) model

	07/31/1996 to 07/31/2006			07/31/2006 to 06/30/2016		
	5-fold cross-validation	Bootstrapped	Sample size	5-fold cross-validation	Bootstrapped	Sample size
Basic Materials	100%	100%	425	100%	100%	356
Communications	100%	100%	317	100%	100%	233
Consumer, Cyclical	100%	100%	712	100%	100%	551
Consumer, Non-cyclical	100%	100%	721	100%	100%	571
Diversified	100%	100%	76	100%	100%	58
Energy	100%	100%	188	100%	100%	186
Financial	100%	100%	838	100%	100%	661
Industrials	100%	100%	811	100%	100%	721
Technology	100%	100%	156	100%	100%	101
Utilities	100%	100%	278	100%	100%	181

Note. Percent of cross-validations the H0 is rejected at the 5% level and the number of data points in the test sample per quintile for the two different periods. The percentage is reported both for the 5-fold cross-validations and the bootstrapped method.

Appendix B

Feature Analysis

The Figure B1 below shows example results for the current linear and Support Vector Regression (SVR) models in the utility sector. The models are trained with data prior to 01/01/2016. The figure shows the response of the linear and SVR model to the different input factors. The response of the models is measured by the predicted future return.

In a linear model, the score increases or decreases linearly with higher input values. In the example below, a higher dividend yield (divYield) creates a higher predicted future return. The response of the SVR model is more complex. The SVR model is converging into two main prediction areas, one for extreme values in the input factors and ‘normal’ values. For extreme values, the SVR model returns the average return of the stocks in the sector over the trained period.

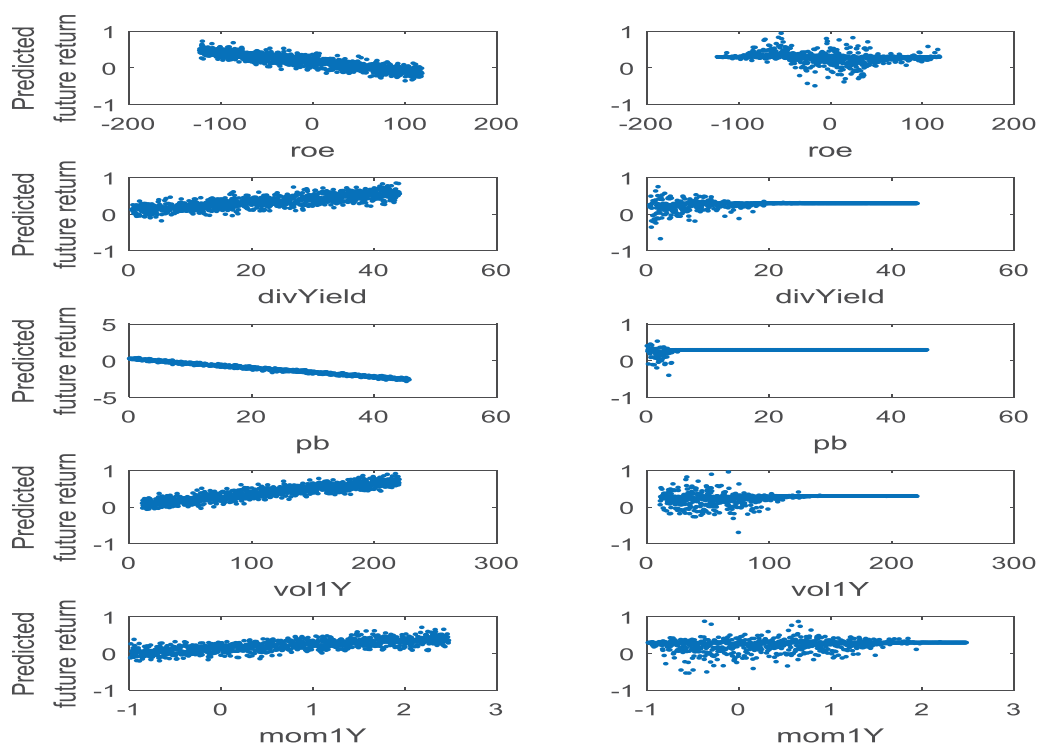


Figure B1. Example response of the linear model (left column) and the SVR model (right column) in the “utility” sector

Note. The model is trained on data between 01/01/2011 and 01/01/2016 (4 years of factor values and 1 year of future return). Response is shown as the relationship between the predicted future return to different values of the five different factors.

Appendix C

Coefficients of the Rolling Linear Model

Table C1. Coefficients of the linear model for each year between 2006 and 2015

	29-Dec-20 06	31-Dec-20 07	31-Dec-20 08	31-Dec-20 09	31-Dec-20 10	30-Dec-20 11	31-Dec-20 12	31-Dec-20 13	31-Dec-20 14	31-Dec-20 15	
Quality	Mat	-0.02%	0.07%	0.05%	0.26%	0.17%	0.00%	0.12%	0.02%	-0.06%	0.04%
	Com	-0.01%	0.00%	-0.01%	0.01%	0.09%	0.05%	-0.02%	-0.02%	-0.02%	-0.01%
	Cycl	0.09%	0.06%	-0.03%	0.03%	0.06%	0.08%	0.10%	0.10%	0.12%	0.10%
	NCy										
	cl	-0.03%	-0.01%	0.00%	0.00%	0.00%	0.01%	0.02%	0.02%	0.02%	0.01%
	Ergy	-0.26%	-0.32%	-0.22%	0.00%	0.07%	0.00%	-0.02%	0.05%	0.13%	0.36%
	Fincl	-0.08%	-0.05%	-0.24%	-0.04%	0.23%	0.27%	0.29%	0.23%	0.02%	-0.02%
	Indu	0.10%	0.06%	-0.02%	-0.05%	-0.03%	-0.06%	0.01%	0.05%	-0.06%	-0.02%
	Tech	-0.22%	-0.11%	-0.08%	-0.01%	0.10%	0.14%	0.11%	0.05%	0.01%	-0.02%
Util	0.08%	0.18%	0.06%	0.12%	0.04%	-0.09%	0.00%	-0.10%	0.09%	0.43%	
Dividend	Mat	0.36%	0.78%	0.78%	3.75%	6.04%	5.85%	5.99%	3.84%	2.01%	0.66%
	Com	1.53%	1.11%	0.22%	0.05%	0.05%	0.03%	0.06%	0.13%	-0.92%	-0.84%
	Cycl	1.14%	1.81%	2.16%	2.53%	3.04%	2.55%	2.18%	0.57%	0.13%	0.09%
	NCy										
	cl	0.01%	0.01%	0.00%	0.00%	-0.20%	-0.21%	-0.08%	-0.05%	-0.01%	-0.06%
	Ergy	1.15%	0.68%	0.82%	0.81%	1.66%	2.08%	2.57%	1.28%	0.02%	-0.56%
	Fincl	1.21%	0.42%	0.59%	0.78%	1.73%	1.66%	1.70%	1.82%	0.17%	0.19%
	Indu	2.13%	1.84%	1.55%	2.20%	3.17%	2.94%	1.53%	0.68%	0.03%	-0.12%
	Tech	-0.15%	-0.36%	-0.39%	0.46%	0.29%	0.30%	0.63%	0.60%	0.69%	0.30%
Util	1.10%	0.47%	1.36%	0.66%	0.97%	1.38%	1.14%	1.96%	2.50%	1.42%	
Growth	Mat	-0.01%	-0.41%	-0.01%	-0.67%	0.03%	-0.45%	-0.49%	0.91%	0.92%	-0.05%
	Com	-0.11%	-0.08%	-0.04%	-0.02%	-0.20%	-0.07%	0.07%	0.09%	0.12%	0.10%
	Cycl	-0.82%	-0.57%	-0.05%	-0.04%	-0.04%	-0.04%	0.14%	0.05%	-0.03%	-0.05%
	NCy										
	cl	0.00%	-0.03%	-0.04%	-0.06%	-0.08%	-0.13%	-0.08%	-0.01%	-0.01%	-0.01%
	Ergy	0.01%	0.01%	0.02%	0.02%	1.24%	-0.39%	-0.81%	0.40%	-0.41%	-0.96%
	Fincl	-0.52%	-0.07%	0.02%	-0.04%	-0.12%	-0.97%	-0.42%	0.23%	0.56%	0.56%
	Indu	0.01%	0.86%	-0.50%	-0.77%	-0.11%	-0.04%	-0.01%	0.01%	0.12%	0.10%
	Tech	0.57%	0.33%	-0.10%	-0.13%	-0.19%	-0.16%	-0.20%	-0.12%	-0.03%	0.04%
Util	-1.24%	-0.65%	-1.78%	-3.29%	-3.34%	-5.21%	-4.97%	0.33%	1.07%	-4.66%	
Volatility	Mat	0.85%	0.87%	-0.26%	0.34%	0.81%	1.03%	1.04%	0.58%	-0.15%	-0.34%
	Com	0.87%	0.67%	0.01%	0.40%	1.08%	1.23%	0.98%	0.72%	0.86%	0.99%
	Cycl	0.58%	0.78%	0.10%	0.23%	0.86%	1.08%	0.83%	0.51%	0.34%	0.35%
	NCy										
	cl	0.41%	0.41%	-0.36%	0.22%	0.68%	0.81%	0.66%	0.29%	0.16%	0.20%
	Ergy	-0.15%	-0.14%	-0.14%	0.48%	0.66%	0.76%	0.79%	0.41%	0.04%	0.26%
	Fincl	0.31%	0.36%	-0.59%	0.01%	0.59%	0.67%	0.53%	0.40%	0.37%	0.66%
	Indu	0.51%	0.50%	-0.28%	0.03%	0.64%	0.92%	0.91%	0.53%	0.19%	0.22%
	Tech	0.71%	0.51%	-0.21%	0.52%	1.14%	1.29%	1.08%	0.47%	-0.15%	-0.13%
Util	0.55%	0.46%	0.57%	-0.32%	0.03%	0.23%	0.18%	0.14%	0.20%	0.20%	
Momentum	Mat	3.02%	1.24%	20.78%	4.32%	-2.09%	-1.80%	-5.08%	2.42%	10.53%	-0.64%
	Com	-5.98%	-3.40%	9.61%	7.76%	-10.72%	-7.44%	-7.73%	-6.68%	-8.32%	-7.25%
	Cycl	-2.81%	-4.55%	7.68%	-2.29%	-8.01%	-3.29%	-4.23%	-2.95%	2.80%	0.15%
	NCy										
	cl	1.74%	8.21%	16.82%	1.98%	-11.40%	-11.98%	-10.78%	-5.82%	2.83%	-0.56%
	Ergy	16.74%	7.01%	6.90%	-8.76%	-26.7%	-13.38%	-8.84%	-0.43%	4.92%	3.22%
	Fincl	3.51%	3.14%	28.38%	16.42%	-2.82%	-10.93%	-12.83%	-14.58%	-7.50%	-10.32%
	Indu	1.59%	3.63%	11.43%	3.24%	-8.08%	-9.26%	-9.31%	-7.07%	-0.46%	-5.44%
	Tech	-7.99%	-4.85%	13.31%	-7.34%	-18.48%	-10.17%	-11.21%	-6.17%	3.86%	-3.17%
Util	16.86%	7.88%	5.65%	10.22%	-2.52%	-7.14%	-2.21%	-0.54%	3.53%	-7.72%	

Note. The coefficients are shown for each input factor and each sector separately.

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Helping Families Affected by Depression: Incorporating Prosocial and Caregiving Literature

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Abstract

In this study, we use prosocial and caregiving literature to strengthen the family section of anti-depression campaigns. We suggest that the addition of the prosocial and caregiving insights bring a new perspective on depression caregiving of family members that goes beyond a mere description of the family's reactions and coping abilities. Built on essential components such as empathy, knowledge and skills instead of fear or anxiety, the development of a specific theoretical framework for designers of anti-depression campaigns targeting people caring for family members suffering from depression increases our understanding of family member behavior as caregivers. It provides families with a comprehensive tool that includes motivational and determining factors in one's will and ability to deliver appropriate help in the face of family illness. Specific recommendations for designers of social marketing campaigns are provided. In addition, we exemplify how an anti-depression campaign targeting family members of depressed people is consistent with the prosocial and caregiving literature, while waiting for a formal evaluation of the effectiveness of the model presented in this article.

Keywords: caregiving behavioral system, compassion, depression, families, prosocial behavior, social marketing campaigns

1. Introduction

Depression is a prevailing mental illness affecting more than 350 million people worldwide (World Health Organization, 2015). It is a serious illness because it may impair one's functioning in daily tasks, productivity, relationships, and health and may even lead to suicide (Health Canada, 2009). Although depression is treatable, less than 40% of people affected by depression seek care from a specialist (Centers for Disease Control and Prevention, 2015) due to societal barriers such as stigma and self-stigma (Jorm et al., 2003) or preferences for self-help or action-oriented/user-driven strategies (Berger, Wagner, & Baker, 2005; Ellis et al., 2013; Rochlen, Whilde, & Hoyer, 2005). In the absence of a specialist's help, the family may play a key role in the recovery of depressed loved ones. Indeed, the depressed person needs help and a family member may become a caregiver by providing protection, guidance, and support and therefore assist in the loved one's recovery. The term "*caregiving*" refers to a broad array of behaviors designed to reduce suffering and promote recovery in a family member (Canterberry & Gillath, 2012).

Anti-depression social marketing campaigns are common (Dumesnil & Verger, 2009) and effective in raising awareness of depression and mental illness and in changing attitudes in the general population (Hui, Wong, & Fu, 2015; Livingston et al., 2013; Nougrou, 2014; Quinn et al., 2014). These campaigns, however, generally focus on the depressed person and the general public, and seldom address the needs of family members. Only a few national campaigns (i.e., Australian beyondblue, Canadian Depression Hurts, UK Depression Alliance, New Zealand's depression.org, and US Men Get Depression) provide a section for family which includes information on how to care for a person affected by depression. Nevertheless, to our knowledge, no theoretical framework has been proposed to help design or to evaluate websites targeting family members of depressed people. Developing resources geared towards family caregivers may potentially assist in reducing the stress that family caregivers experience while caring for their loved one (Möller-Leimkühler, 2005).

There is thus a need to develop a theoretical basis for this particular targeted audience (Kelly, Jorm, & Wright, 2007; Noar, 2006). In this study, we thus focus on the person helping the family member suffering from depression and choose to use the prosocial behavior (PB) (Penner, Dovidio, Piliavin, & Schroeder, 2005)

literature and the caregiving behavioral system (CBS) literature (Brown, Brown, & Preston, 2011; Canterbury & Gillath, 2012; Swain et al., 2012) to understand the process and difficulties a family member experiences while caring for a loved one in need. We choose to incorporate PB and CBS because both build upon attachment theories, explaining human motivation in first becoming, then staying involved in the caring for a loved one. We feel that this critical positive component (not based on fear or a negative emotion) was missing from the literature addressing campaign design and evaluation of campaigns targeting family members of depressed people. Through understanding the caregiving process, we can suggest effective messaging and evaluation guidelines for depression campaign components targeting family members of depressed people with the ultimate purpose of helping families better cope with this illness.

2. Background

Several theories have been utilized to describe the stress and coping mechanisms of caregivers notably Kreps's (1988) relational health communication competence model (Weathers, Query, & Kreps, 2010), Pearlin's model of family caregiving (Cameron et al., 2011), and several personality models (e.g., Löckenhoff et al., 2011). Behavioral and stage step theories used in caregiving contexts include the theory of planned behavior (Schuster, Kubacki, & Rundle-Thiele, 2016), the theory of reasoned action (Corcoran, 2011), and the Caregiver Behavioral System model (CBS) (Canterberry & Gillath, 2012; Swain et al., 2012). Theories used in depression contexts, including the theory of planned behavior (Hui, Wong, & Fu, 2014) and transtheoretical model of change (Levesque et al., 2011; Tsoh & Hall, 2004), describe intentions and behaviors of the depressed person. Most recently, Levit, Cismaru, & Zederayko (2016) combine transtheoretical model of change and social marketing principles in a mental e-health context and create a set of 25 detailed criteria to guide the development of anti-depression campaigns with a focus on the depressed person; the information targeting family and friends was not considered. That said, there is a dearth of studies using behavioral theories explaining caregiver motivation in caring for depressed people. For example, Jeglic et al. (2005) are among the few authors who have used the CBS model to characterize partner coping abilities to manage another's depression. Additionally, Egbert, Miraldi and Murniadi (2014) proposed the extended parallel process model, usually used in fear appeals, to understand the behavior of college students in the intervention in a friend's depression and to design health depression campaigns. The authors suggest that empathy, emotional contagion, and perceived knowledge may influence the decision-making process of intervention. They also emphasize the persuasive role of family in convincing the depressed loved one to seek professional help.

3. Prosocial and Caregiving Behavior

The Caregiver Behavior System (CBS) is comprised of three stages: (a) the perception of a need in another, (b) a caring motivational or feeling state, and (c) the delivery of a helping response to the individual in need (Swain, 2010; Swain, Kim, & Ho, 2011; Swain et al., 2012). From the CBS perspective, one can identify the fundamental reasons that encourage family members to help others in need of care, their initial response to the need that they have identified or perceived from their loved one, and their motivational conflicts during the entire process that includes the actual active care.

3.1 *The Perception of a Need in Another*

The PB literature (Latane & Darley, 1970; Penner et al., 2005) and the CBS literature (Brown, Brown, & Preston, 2011) stipulate that whether or not a person renders aid at the individual level depends upon the outcomes of a series of prior decisions that involve as a first step recognizing the situation as one requires assistance. The CBS literature further stipulates that significant individual differences exist in terms of a person's tendencies to perceive distress cues, and to understand, interpret and act upon them (Canterberry & Gillath, 2012). For example, adults who experienced quality parenting as children may express stronger compassion and altruistic behaviors toward others, being therefore more likely to help a family member in need (Swain et al., 2012). Compassion, defined as "the feeling that arises in witnessing another's suffering that motivates a subsequent desire to help" (Goetz, Keltner, & Simon-Thomas, 2010, pg. 2), is a psychological construct encompassing feelings of empathy (social cognitive ability), loving kindness (caring feelings), and generosity (helping actions) toward others regardless of kinship (Brown & Brown, 2006; Swain et al., 2012). Compassion therefore is a motivation to promote the well-being of others and is subserved by a general caregiving system that may operate at the family level (Brown, Brown, & Preston, 2011).

Because feeling compassion can act as a motivator for caregiving, campaign designers could use messages that encourage developing compassion for family members. There are several ways to increase compassion through training (Weng et al., 2013). Since greater altruistic behavior may emerge from understanding the suffering of other people (Weng et al., 2013), messages may increase empathy by explaining the suffering of the depressed

person, stating that depression is an illness, and emphasizing that the family member's behavior is a behavior of a person who suffers. To increase loving kindness and generosity, the other two facets of compassion, the messaging should include themes that increase attachment to the person in need (Penner et al., 2005) through methods such as encouragement to retrieve positive memories with their loved one, as this may induce a sense of security and positive mood, and make the caregiver become more sensitive and responsive to the depressed person's needs (Canterberry & Gillath, 2012). This can be done through the presentation of pictures implying attachment-figure availability (e.g., a couple holding hands and gazing into each other's eyes), the presentation of the names of security-providing attachment figures or words associated with a sense of security provided by an attachment figure (e.g., love, hug, comfort), and guided imagery concerning either the availability and supportiveness of attachment figures or security-enhancing interactions (e.g., describing a time when one received comfort and support from a loved one) (Canterberry & Gillath, 2012; Mikulincer & Shaver, 2007).

Consistent with the above recommendations, beyondblue, a national Australian anti-depression campaign (www.beyondblue.org.au/) has a 44-page guide titled "The beyondblue Guide for carers – Supporting and caring for a person with anxiety and depression" (Beyondblue, 2016). The guide contains a multitude of useful advice on how to take care of a loved one dealing with depression while at the same time taking care of oneself. The first section titled "Caring for others" is consistent with some of the suggestions from the PB and CBS literature. For example, numerous pictures of happy couples or loving people as well as people talking to each other are shown in the guide, posited by CBS to encourage emotional attachment and to make people more likely to render help. As well, quotes of carers' thoughts and feelings during the process of caring for a loved one are provided everywhere, and may be likely to increase the feeling of attachment toward the person in need of care (e.g., I would not put up with it, if I did not love him, p.27).

3.2 A Caring Motivational State – Motivational Conflict

If the person feels compassionate toward the other family member and considers caring for the family in need, he/she will start evaluating his/her own ability to alleviate the suffering (Canterberry & Gillath, 2012). At this point, the question is how and if effective active help can be provided. The CBS has yet to be activated: a decision must occur before the system is activated even though a need and health threat to the family has been perceived. One may care emotionally for the well-being of another person, but because of personal reasons and/or situational reasons, proper care cannot be given, hence these motivational conflicts create a decision-making process (Brown, Brown, & Preston, 2011). Certain criteria may enter into play such as:

- the closeness of the relationship, the level of attachment, the attachment style (controlling, responsive, compulsive),
- the interdependence of happiness of the family members (c.f. the fitness interdependence concept as per Brown, Brown, & Preston, 2011), the feeling of reciprocal threat to health to the carer and the depressed person and the benefits for the family functioning,
- the affect (such as sympathy and anger),
- social support outcome expectations and controllability (Siegel et al., 2012),
- the usefulness of the intervention, the type of caregiving required, and the type of response required,
- the belief and attitude towards the illness (depression) and the severity of the depression,
- the sense of competence and personal attributes of the family members (social connections, personal health, education, personality traits, etc.),
- situational attributes (e.g., problems at work),
- and other sources of motivations (such as cultural norms, obligations, compassion, and empathy) (Canterberry & Gillath, 2012; Egbert, Miraldi, & Murniadi, 2014; Guttman & Ressler, 2001).

According to the PB literature, the delivery of a helping response will only occur if the perceived pros overcome the perceived cons (costs) of caregiving for the depressed loved one (Penner et al., 2010; Prochaska, 2008). The family member may decide to either actively help (and move on to start planning the rehabilitation of the person and to look for solutions) or to not become a caregiver if he/she considers he/she does not have the required skills or resources needed to render help. If a family member has assurance and confidence that he/she can alleviate the other person's illness, then he/she will decide to become a caregiver (Canterberry & Gillath, 2012). The CBS is then activated and the caregiver starts thinking about specific ways to improve the well-being of the family member in need. If the family member perceives that the cons are overwhelming, he/she may distance himself/herself from the depressive person and may bring the depressed person into the hands of someone else

(e.g., a professional, a hospital, a parent). It is noteworthy that in depression cases, the provision of help can be simultaneously provided by both the family and health professionals (psychologists, physicians, social workers, etc.).

In terms of advice for designers of campaigns targeting family members of depressed people, several suggestions can be made based on the PB literature. The message should emphasize norms such as family responsibility and reciprocity to encourage the caregiver to help (Dovidio, 1984). It should use arousal and affect, in particular emphatic arousal to encourage feelings of emphatic concern, such as sympathy and compassion that are likely to arouse altruistic motivation with the primary goal of improving the welfare of the person in need (Batson, 1991). The message should encourage the caregiver to commit to help and express this commitment in public (Kerr, 1995; 1999). Public commitment has been found to trigger behavioral change (Mckenzie-Mohr & Smith, 2008).

The message should help the potential caregiver identify and appreciate pros of helping and at the same time reduce the costs associated with the actual provision of help. Indeed, the caregivers can be helped to develop beliefs about how their care can benefit the depressed person and the entire family (Grusec et al., 2002). More importantly, the messages may attempt to reduce the perceived costs of helping and increase the perceived benefits, so a person may realize the positive impact rendering help may bring and the negative consequences a lack of help may not be able to prevent. For example, it can be pointed out that engaging in relaxing, fun activities on a regular basis as a family would benefit not only the depressed member but the family as a whole.

Most important, the message should increase the confidence of the potential caregiver that he/she can actually alleviate the other person's illness. The message should encourage insecure caregivers to acquire the helping skills needed to provide care (Grusec et al., 2002). This can be done by applying general principles from learning theories, particularly operant conditioning and social learning. For example, messages can include methods to make a caregiver feel rewarded for rendering care, therefore reinforcing the particular behavior. Increasing confidence can also be achieved by using simple encouragement slogans such as "Many families are successful in controlling depression. You can do it, too!" and providing individuals with reasons to believe that they can follow the recommendations. Presenting success stories from people who were able to keep the illness under control is also another way to encourage caregivers (Cismaru, 2014; Cismaru et al., 2011; Pike, Doppelt, & Herr, 2010).

Consistent with the suggestions provided above, beyondblue

(<https://www.beyondblue.org.au/supporting-someone/supporting-someone-with-depression-or-anxiety>) likely increases carers confidence that they can provide the appropriate help by pointing out things one can do to help someone with depression as follows:

- let the person know if you've noticed a change in their behavior
- spend time talking with the person about their experiences and let them know that you're there to listen without being judgmental
- suggest the person see a doctor or health professional and/or help them make an appointment
- offer to go with the person to the doctor or health professional
- help the person to find information about depression and anxiety from a website or library
- encourage the person to try to get enough sleep, exercise and eat healthy food
- discourage the person from using alcohol or other drugs to feel better
- encourage friends and family members to invite the person out and keep in touch, but don't pressure the person to participate in activities
- encourage the person to face their fears with support from their doctor/psychologist.

Beyondblue also provides advice of what can be unhelpful to do while caring for a family member suffering from depression:

- put pressure on the person by telling them to 'snap out of it' or 'get their act together'
- stay away or avoid them
- tell them they just need to stay busy or get out more
- pressure them to party more or wipe out how they're feeling with drugs and alcohol.

In addition, beyondblue has an on-line chat option available 24 hours that can provide specific advice about what is helpful or not for the person suffering from depression and the caregiver in their particular situation. This

on-line chat may considerably increase confidence in carers that they provide the appropriate help, since all family are probably willing to help a loved one in need, but are not sure if their good intentions are translating in helpful aid.

3.3 The Delivery of Helping Response to the Individual in Need

According to the CBS, if a person decides to help a family member suffering from depression and feels confident that he/she can actually alleviate the suffering, aid is likely to be provided (Canterberry & Gillath, 2012). Rendering aid may include searches and evaluations of possible programs and activities, consultations with a health professional, and engaging in activities of all sorts to maintain the social network of both the caregiver and the depressed person. If the family member's suffering for depression is alleviated, the caregiving system is deactivated in the helper (Canterberry & Gillath, 2012). On the path to recovery it is possible that the depressed individual lapses or that no improvement in his/her condition is observable after aid is rendered. It is also possible that the caregiver is not capable of resolving motivational barriers to the provision of help and fails to stay motivated. If this occurs, the caregiver may have to re-evaluate his/her position and caring techniques and decide if he/she is still capable of assisting the person in need (Canterberry & Gillath, 2012). Two scenarios are predicted: the first predicts that the carer will re-assess the situation and his/her motivations to providing help. At this point, the relationship may be at stake if the cons of caregiving are becoming increasingly unpleasant. The caregiver's job is then to re-evaluate the situation and the means he/she has to being an active agent in the recovery plans of the depressed person. The caregiving system may deactivate itself if the carer decides to give up – or to distance himself/herself if the provision of help is no longer an option in order to not trigger the re-activation of the caregiving system (Canterberry & Gillath, 2012). The second scenario predicts that the carer will still have the motivations behind the provision of help and the caregiving system is still activated. The carer will then work towards developing a new plan of actions and try to actively help once again. There could be several persistent attempts (plans) resulting in more effortful caregiving behaviors. In the second scenario, the family member who has decided to be engaged in this process will hopefully learn from past mistakes and make adjustments to move forward (Canterberry & Gillath, 2012).

For motivational purposes, a plan should be made and benefits for both the caregiver and the person in need should be included in this plan. The plan may also include strategies to modulate the carer's stress response and life during the provision of help. Stress arising from the caregiving duties may come from lost opportunities, personal distress, threats to well-being, energy depletion, loss of status at work or in the family, separation from other friends and family members, etc. Caregivers may have to develop self-awareness of their own responses to the depressive state of the person, realize their role in the family — namely, it is through understanding and non-judgmental help that change may occur — and may have to create a sense of security in the depressed person in order to transform negative reactions into positive ones (Canterberry & Gillath, 2012).

During the provision of help, the family member applies the plan that is intended to help the depressed person to recover and to go back to a life free of illness. The plan will include items intended to help the caregiver to go through difficult times. During this stage, carers will likely develop a sense of behavioral control, in addition to their caring duties, and control negative thought, engage in amusing and healthy activities, visit family regularly, manage their stress, exercise, and/or seek professional help when needed and all this while keeping in mind the benefits of the provision of help to the family's health and while constantly regulating motivational conflicts (Canterberry & Gillath, 2012).

In terms of advice for designers of campaigns targeting family members of depressed people, several suggestions can be made based on the CBS literature. The messaging should encourage the caregiver and help the caregiver to create a good plan for the family that includes engaging the family in activities of all sorts to maintain the social network of both the caregiver and the depressed person. Next, the message should help the carer to maintain a positive attitude by teaching him/her ways to deal with stress such as exercising or meditation and encouraging the caregiver to remember the reasons about his/her decision to help. It should emphasize the caregiver's essential role in the family's health. Finally, the message should encourage and help the caregiver to resolve motivational conflicts that would act as barriers to the provision of efficient help to the depressed person. Themes or topics to include could cover relationship issues such as spousal support, forgiveness, and couple conflict may need to be addressed to improve the couple's sense of attachment security, which is expected to improve the quality of their relationship including caregiving and care receiving (Canterberry & Gillath, 2012; Johnson & Whiffen, 2003; Obegi & Berant, 2009). In addition, messages should advise the caregivers to expect setback-relapses as a normal part of the healing process.

The beyondblue Guide for careers (<http://resources.beyondblue.org.au/prism/file?token=BL/0445>), is somewhat

consistent with CBS since it offers helpful advice and tips about caring for others that include:

- how to get through the tough times
- what worked and what didn't
- how to overcome a range of difficulties
- how to support a person with a mental condition, and
- how to access support available for carers.

The Guide includes also a section titled "Overcoming setbacks" as well as relapse and moving forward. It ends with more information and support available that includes National help lines and websites, support for Carers such as Carers Australia and Mental Health Carers Australia.

4. Conclusion and Recommendations

Family of people suffering from depression may be able to provide appropriate help and care to the person in need on an ongoing basis. Therefore, their role cannot be underestimated. Helping somebody suffering from depression can be extremely difficult. Carers need a strong motivation to do it, especially on a long term basis as well as specific advice of how to help in an effective way. The present paper incorporates knowledge from the prosocial behavior (PB) and caregiving (CBS) literature and shows how this knowledge may guide communication trying to assist carers of depressed people to render effective help leading to healthier families. In addition to focusing on positive aspects of the vast emotional range of an individual, the provision of a comprehensive tool that includes motivational and determining factors in one's decision to help another in need is adding to the current literature of anti-depression campaigns. This paper also gives examples of messaging from an existing campaign (beyondblue) and proposes more messages for future depression campaigns. To effectively apply the theoretical framework presented in this study to anti-depression campaigns and to increase its effectiveness and relevance, further work may formally evaluate the importance of each component of the CBS and the PB theory.

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Long-term Dynamics of Employee Identification with an Organizational Unit

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Abstract

This study presents the first framework for understanding the long-term dynamics of employee identification with an organizational unit. Similar research generally adopts cross-sectional quantitative methods that insufficiently explain the long-term dynamics of identification. Following studies that find stronger identification with lower-level groups than with an entire organization, we examine the case of a marine hull unit of a Japanese property-casualty insurer. We suggest that employees initially identify with the unit because of “occupational ability recognition” and “affective recognition”. We identify that these factors are necessary and sufficient conditions for identification with the unit. When they are absent, dis-identification occurs. If identification based on these factors is maintained, “value preferences” become dimensions of identification. Members prefer the unit values of interesting work, professional utility, and career attainment. When employees are dissatisfied with the unit’s values, ambivalent identification occurs. Ultimately, mature employees may express a “value proposition orientation”. They identify with the unit by consciously relating their value proposition and the unit.

Keywords: organizational identification, unit, long-term dynamics, case study

1. Introduction

Studies of organizational identification discuss relations between members’ self-concepts and organizations. A body of growing research examines identification with entire organizations and with constituent teams, work groups, units, and departments. We define employee identification as incorporating an organization’s or unit’s values into a self-definition.

In daily life, units rather than organizations are the reality for employees. Actually, extensive research documents a strong identification with units than with organizations (Millward & Postmes, 2010; Olkkonen & Lipponen, 2006; Riketta & Nienaber, 2007; Ullrich, Wieseke, Christ, Schulze, & Van Dick, 2007; Van Knippenberg & Van Schie, 2000).

Many employees spend years in a business unit, and their relationship with it attains great personal meaning. Ashforth (1998) said that “identity is a perpetual work” (p.213). Feelings of identification change throughout a career as “(o)ur lives are lived in constantly changing roles and situations embedded in the course of human development and social change” (Demo, 1992, p.306). Yet the long-term dynamics of identification with organizations and their constituent units have been insufficiently discussed because previous studies adopt a cross-sectional quantitative approach toward its localized and static aspects (Ashforth, Harrison, & Corley, 2008; Demo, 1992). They perhaps do so because recent studies of organizational identification are grounded in social identity theory, which assumes people operate with motives for self-enhancement (Takao, 2013). Researchers have focused on organizations with positive external images when documenting the antecedents of identification (Note1). In such situations, members are unlikely to envision difficulties that prompt them to reconsider their identification.

This research is a case study of one unit within Tokio Marine & Nichido Fire Insurance (Tokio Marine), a Japanese property-casualty insurer. It is the first to examine the long-term dynamics of employee identification and to construct a framework explaining how identification occurs, changes, and diversifies over time. Although employees of this unit formerly were seen as the company’s elite, its prestige has declined since the 1980s. By assuming motives related to self-enhancement, social identity theory predicts a decline in identification or

dis-identification in such situations. However, we find that employees' identification with the unit is not necessarily weak and that many factors are contributors. By examining this case, we uncover causal paths and factors overlooked by the existing theory. In addition, the unit's operating environment has been unstable, and employees have encountered repeated incidents that potentially influence their identification.

2. Literature Review

2.1 Definition of Organizational Identification

Mael and Ashforth (1992) defined organizational identification by its cognitive dimensions as "a perceived oneness with an organization and the experience of the organization's successes and failures as one's own." Dutton, Dukerich, and Harquail (1994) defined it as "the degree to which a member defines himself or herself by the same attributes that he or she believes define the organization." Pratt (1998) indicated that "an individual's belief about his or her organization becomes self-referential or self-defining." However, Harquail (1998) and Pratt (1998) noted the importance of the affective dimension, and Dutton and Dukerich (1991) and Pratt (2000) found that identification is accompanied by emotions.

Since Tajfel's (1978) pioneering work, social identity has been defined as "the value and emotional significance attached to that membership." That is, it includes value dimensions and affective dimensions. Ashforth et al. (2008) set self-definition, importance to themselves, and effect at the core of identification. Values, goals, beliefs, stereotypic traits, knowledge, skills, and ability are assumed to be fluid and to influence identification in varying degrees. Building on these discussions, we regard identification "as an important part of the self-concept of the subject to be recognized within the dimensions of affect and value."

2.2 Disidentification, Ambivalent Identification, and Neutral Identification

Identification is a positive relation between an organization and an employee (Kreiner & Ashforth, 2004), but disidentification is an overt cognitive separation of one's self-definition from the organization. Ambivalent identification is simultaneous identification and disidentification. Neutral identification describes the situation wherein members' self-perceptions involve neither identification nor disidentification (Elsbach, 1999; Kreiner & Ashforth, 2004).

2.3 Antecedents

Extensive research has been based on social identity theory (Ashforth & Mael, 1989; Dutton et al., 1994; Mael & Ashforth, 1992). Pratt (1998, pp.181–191) sorted out the following antecedents of identification based on social identity theory.

Membership is a distinction between an in-group and an out-group. When an organization enjoys an attractive image, membership enhances self-esteem. Based on the theory of self-categorization that Turner, Hogg, Oakes, Reicher, and Wetherell (1987) developed from social identity theory, identification is more likely when other organizations are salient than the own organization is alone salient. People are less likely to identify with an organization when its employees are heterogeneous and when its employees and those of other organizations are homogeneous.

However, Fuller, Hester, Barnett, Frey, Relyea, and Beu (2006) noted that employees identify with organizations based on perceptions of internal respect, not merely external prestige. Olkkonen and Lipponen (2006) found a significant correlation between interactional justice and identification with work units, whereas distributive justice and procedural justice correlate to identification with an entire organization. They also noted an indirect relation between organizational socialization and organizational identification. People incorporate elements of the organization's identity into their self-definitions through socialization and organizational identification proceeds (Ashforth & Mael, 1989).

2.4 Occurrence of Identification

Although research into the antecedents of identification accumulates, identification itself has been considered a static event rather than a dynamic process (Pratt, 2000; Ashforth et al., 2008). Pratt (2000) is among the few to address the process of identification in his study of Amway distributors. The study referenced Weick's (1995) sense-making approach and proposed that identification is a progression of sense-breaking → seekership → sense-giving → encapsulated sense-making → positive identification. Pratt (2000) is inspired by Lewin's (1958) change model and used Lewin's term "unfreezing" in referring to "sense-breaking."

2.5 Lacking Discussion in the Existing Literature

Ashforth (1998) proposed a process model illuminated by Lewin's model, but we doubt that the long-term dynamics of identification can be examined sufficiently by repeatedly connecting the elements in process models.

Although Ashforth (1998) and Pratt (2000) modeled the short-term processes and the localized elements of identification, their models do not explain the long-term dynamics of organizational identification.

To overcome the limits of research confined to the static aspects of identification, we examine a case study of a marine hull insurance unit and propose a theoretical framework to explain how employee identification occurs and changes over time.

3. Method

We adopted the qualitative research design that Strauss and Corbin (1998) and Yin (2003) advocated to examine insufficiently explained phenomena.

3.1 Case Selection

We study a most-likely case. Explorations grounded in theory are more likely to yield results consistent with that theory, whereas a most-likely case will yield results unbounded by theory. Investigating a most-likely case uncovers causal pathways and variables overlooked by established theory (Eckstein, 1975; George & Bennett, 2005).

We examined Tokio Marine's marine hull insurance unit because it had been significant and powerful within the company. Its employees had been seen as the company's elite, but that perception and the unit's prestige dimmed as the unit's premium income shrank. Theories of organizational identification grounded in social identity lead us to expect that employees exhibit low identification or dis-identification with the unit because of its declining prestige. We found instead that employees identify for multiple reasons. In addition, the unit's operating environment had been historically unstable, and its employees have had numerous opportunities to alter their identification. Thus, the marine hull unit seemed ideal for capturing the dynamics of identification.

3.2 Data Collection

We collected data through semi-structured interviews, semi-overt participant observation, and archival data. Multiple sourcing enabled us to triangulate data sources for robust interpretations of findings (Eisenhardt, 1989; Yin, 2003; Pratt, 2000).

We conducted semi-structured interviews with 21 unit employees from March 2012 to December 2012. The highest-ranking interviewee was the division manager and the lowest-ranking were untitled. As is customary in Japan, all employees had been with the company since leaving university. The oldest interviewee joined the company in 1977 and the youngest in 2012. Interviews lasted approximately 60 minutes.

We conducted semi-overt participant observation from March 2012 to December 2012. We observed employees while working alongside them during their daily tasks. Observation by semi-overt participant has two advantages: subjects trusted us as colleagues, and as researchers, we could ask questions that would have seemed strange coming from colleagues (Pratt, 2000).

We accessed archival data from corporate histories, internal conference documents, and internal bulletins to establish the unit's environmental context.

3.3 Data Analysis

We took a theory-building approach by iterating back and forth between the data and emerging theoretical frames (Strauss & Corbin, 1998). We constantly compared data and emerging theory, working incrementally toward an empirically valid theory that fits the data.

4. Analysis and Findings

4.1 Case Overview

Tokio Marine was founded in 1879 as Japan's first marine insurer. Initially an insurer of marine cargo, it soon began underwriting marine hulls, and that was Tokio Marine's primary business until World War II, when the Imperial military commandeered and depleted Japan's merchant fleet.

After the war, Tokio Marine resumed operations, mainly providing fire insurance. Japan's marine insurance business expanded during the high-growth 1950s and 1960s, and non-marine insurance grew exponentially with household car ownership. After the 1973 oil crisis, growth led by capital investment retreated. Because Tokio Marine had emphasized corporate underwriting, especially marine insurance, receding growth in Japan's corporate sector eroded the company's performance.

Therefore, the company's three-year medium-term management plan in FY1977 emphasized the household sector. This plan sought to change both the organization's structure and the employees' mindsets. According to

corporate history, employees regarded corporate business units more highly than household business units. To change this perception, the company transferred many managers from corporate business units to regional household business. Until then, employees of the marine hull unit had regarded themselves as the elite.

The non-marine insurance business grew after the 1977 management plan, but the marine hull insurance business stagnated, especially after the 1985 Plaza Accord, as the yen appreciated against the dollar. Japanese shipping fell into recession, and merchant fleets declined in size. The marine hull insurance unit lost prestige and became seen companywide as a cadre of specialists.

When Japan liberalized the marine hull insurance business in 1997, fierce price competition ensued among domestic and foreign insurers. In FY2000, premiums of Tokio Marine's marine hull insurance fell 40% from FY1996 and 60% from their peak in FY1984. During FY2005 and FY2006, the unit lost money and faced severe intra-company criticism.

At the time of our research, the unit had a sales department in Tokyo, a sales department with four offices in Western Japan, and an underwriting department in Tokyo. There were several vice presidents in the unit but no active corporate officers were from the unit.

4.2 Entry Phase and Identification

Tokio Marine assigns new employees to business units after a few months of training. Until the early 1980s, the marine hull insurance unit was popular among new employees, who were attracted by its image as "cool work," "elite," and "easy to promote." Fewer new employees sought assignments there after the 1980s as the unit's prestige declined.

New employees generally become salespeople serving small and medium-sized coastal ship owners, marine construction companies with barges, and tugboats. Their offices often are at ports and even aboard vessels, not in Manhattan-style business districts. New employees are unfamiliar with customer relations practices. They make mistakes and routinely are scolded by their bosses, senior coworkers, and customers. If they had positive perceptions of the unit before, such perceptions vanished after being assigned there. Once acclimated to their work, however, they are accepted by bosses and seniors and recognized for their contributions. Most come to regard the unit as personally important, and it becomes significant to their self-definition.

This route to identification is similar among mid-career employees who transfer to the unit. Transferred employees have enough work experience to know that the unit's image is less important than their performance. Like new employees, they come to regard the unit as personally important after they grow accustomed to their jobs and earn their colleagues' acceptance. If transferred employees move to other sections, they acknowledge that "I am accepted as a member of the unit" and their identification with the unit strengthens. However, their identification with the unit is hampered by lack of recognition. Some transferred employees do not feel at ease with the unit and, thus, dis-identify with the unit.

Emotional factors influence new and transferred employees' identification with the unit. Employees interact at work and over drinks and golf. Newcomers form ties through these exchanges and come to regard coworkers as companions. The unit becomes "a place of my own," and new employees identify with it. They usually are unaware of those ties, but they become apparent when the environment destabilizes. After initially being transferred, for example, employees feel alienated when coworkers are cordial and outgoing with each other. They realize they lack collegial ties with coworkers and may erect psychological barriers against unit identification. Dis-identification occurs in such cases. In addition, as noted in Subsection "Effect from Relationship with Outside the Unit," ties with others were missing in the regional branch out of the marine hull unit where they worked alone. These employees recalled their ties to previous colleagues, and their sense of identification with the marine hull unit was reinforced.

4.3 Value Preference and Identification

After being recognized for their performance and forming ties with colleagues, employees incorporate the unit's values into their self-concepts. Their identification with the unit strengthens, and factors of identification multiply. Employees' value preferences are one such factor, and employee identification can become ambivalent if the unit does not meet their values. In short, value preferences strengthen or attenuate identification with the unit.

Most surveyed employees indicated that the unit meets the value they place on interesting work. Japanese property-casualty insurance is generally underwritten by agencies, but insurers write most marine hull insurance directly, giving salespersons contact with client shippers and shipbuilders. Learning about the industry and its issues, including international maritime law and the risks of terrorism and piracy, satisfies their intellectual curiosity.

Since the unit had produced many corporate officers, employees who joined the company before the 1980s saw it as a fast track to promotion. However, no unit employee has been appointed as a corporate officer since 1991, and respondents who valued career ascendancy wanted to transfer to units they believe offer promotion potential. Even so, the unit had four vice presidents in 2012, and some respondents believed that promotion to vice presidency is a sufficient career achievement. Even if employees focus on prospects for promotion, personal aspirations determine whether they find the unit attractive.

Moreover, some employees take pride in belonging to the unit. They relish its image as an international business involving foreign particulars and cross-border transactions. Some respondents mentioned that they are proud that a distinguished pre-war manager had come from the unit.

Although these value preferences are antecedents to identification, respondents differed about which values they preferred, and their values changed over time.

Some employees were frustrated that the unit did not meet the value they placed on interesting work and welcomed a transfer to a more interesting employment. Some were unsatisfied with the unit's image and welcomed transfers to units with more allure. These respondents nonetheless maintained their identification with the marine hull unit as a "homeland" and "safe haven," where they formed ties and earned recognition. That is, their identification with the unit was ambivalent.

Even those respondents who felt that another unit would offer interesting work and a desirable unit image maintained their identification with the marine hull unit. Despite their dissatisfaction, they most valued recognition for their performance and feared that a new unit would not provide it. On the other hand, dis-satisfied employees who are confident about acclimatizing to new duties and being accepted remained receptive to a transfer.

In sum, value preferences reinforce employee identification or ambivalent identification. The important determinants are forming ties and being recognized for performance.

4.4 Value Proposition and Identification

Some respondents who had worked for the unit for many years—primarily senior managers—identified with it because it allowed them to mentor their juniors and propose significant value to society. Although little time remained in their careers, they expressed such feelings as "I want to leave a good thing" and "I want to find significance in what I have done." The unit featured large in their self-identity as a place where they could transmit experience, skills, and beliefs to their juniors and provide values brought about by their experience to society. These respondents reported, "I want to improve the department."

Those respondents who relate their value positions with the unit maintain their identification state regarding receiving performance recognition and forming collegial ties.

Numerous respondents did not relate their value propositions with the unit. Even in such cases, no negative effect appeared with respect to identification or ambivalent identification based on other factors.

4.5 Effect from Relationship with Outside the Unit

We have discussed the dynamics of identification in respect to intra-unit factors, but external relationships also affect identification with the unit.

When the unit lost money in FY2005 and FY2006, several respondents heard criticism from outsiders that "the marine hull insurance unit has no *raison d'être*" as a "petty unit," whose employees were "useless narrow specialists." Some worked alone in the regional non-marine insurance branch, where they received no performance recognition nor formed ties among non-marine branch employees, but they were welcomed at the marine hull unit conferences and regarded the marine hull unit as "homeland." Although criticism from outsiders reinforced the unit's negative image, the unit contributed to their self-concept and that reinforced their identification with it. These employees were indignant over criticism and realized more keenly the unit's importance to their self-concept.

Not all respondents suffered these insults, but they affected the unit identification of those who had. Conversely, some respondents received affirmation from people outside the unit via comments such as "Jobs in the marine hull insurance unit look cool." These affirmations bolstered their identification with the unit.

5. Discussion

5.1 Theoretical Framework for Long-term Aspects of Identification

We examined the marine hull insurance unit of Tokio Marine as a case that illustrates the long-term dynamics of

employee identification. We now consider the supporting theoretical framework indicated in Figure 1.

Although some new employees sought assignment to the unit because of its image, what was important for them in the early stage was having their performance recognized by colleagues and they themselves perceive this. We call such inter-subjective recognition “*occupational ability recognition*.” When employees form collegial ties and they themselves perceive this, we call such inter-subjective recognition “*affective recognition*.” Both are satisfied as employees acclimate to their work, are recognized for performance, and form collegial ties. Their initial identification with the unit occurs at that point.

In contrast, employees whose occupational ability recognition and affective recognition were not satisfied entered a state of dis-identification. Therefore, occupational ability recognition and affective recognition are necessary for positive identification with unit. As necessary conditions, they are antecedents for employees’ initial identification with a unit.

Employees whose occupational ability recognition and affective recognition are satisfied and who identify with the unit adopt its values. The unit’s value preferences become their own and are tied to the motive of self-enhancement. Value preference joins occupational ability recognition and affective recognition as antecedents of identification. Three types of values are objects of value preference: “*interest value*” derived from doing interesting work, “*utility value*” derived from the prospects for career advancement, and “*attainment value*” derived from associating with a unit that has a desirable image. These three constructs appear in the study by Eccles, Adler, Futterman, Goff, Kaczala, Meece, & Midgley (1983) and are redefined for business organizations. How and which values are preferred depends on the employee. Even if employees have reservations about the unit meeting their significant values, disidentification does not occur. However, ambivalent identification occurs as long as occupational ability recognition and affective recognition sustain employees’ identification with the unit. Thus occupational ability recognition and affective recognition are necessary and sufficient conditions for identification. Although value preferences reinforce identification or render it ambivalent, it is neither necessary nor sufficient for identification but merely a contributing factor.

We refer to employees who wish to develop their juniors and provide significant value to society as having a “*value proposition orientation*.” Only some employees identify with a unit because they have a value proposition orientation. Unlike occupational ability recognition, affective recognition, and value preference, a value proposition orientation arises at the end of a career. Employees need greater maturity before deriving value from transmitting their experience, skills, and beliefs to others and providing significant value brought about by enough experience. Unit identification based on a value proposition orientation depends on whether the employee consciously regards belonging to the unit as indispensable for satisfying that orientation. Although a value proposition orientation can reinforce identification and multiply the factors of identification, disidentification and ambivalent identification arise without it. A value proposition orientation is neither a necessary nor a sufficient condition for identification but only a contributing factor.

Antecedents	Timing		Importance for Identification	When not satisfied	Influencing Relationship with the outside
	Entrants	Matured			
Occupational Ability Recognition	→		Necessary and Sufficient Condition	Disidentification	Labeling
Affective Recognition	→		Necessary and Sufficient Condition	Disidentification	Labeling
Value Preference	→		Contributing Factor	Ambivalent Identification	Insult and Criticism to a Unit (or Positive Evaluation)
Interest Value					
Utility Value Attainment Value					
Value Proposition Orientation	→		Contributing Factor	none	—

Figure 1. Typological Framework of Identification with an Organizational Unit

In sum, factors that determine identification with a unit become more diverse as antecedent factors multiply or ambivalence arises. First, identification based on occupational ability recognition and affective recognition, both of which are necessary and sufficient for identification, occurs during the initial stage of associating with a unit. If these antecedents are lacking, dis-identification occurs. If identification based on these necessary and sufficient antecedents is maintained, dimensions of identification multiply according to value preferences, a contributing factor to identification. If a unit does not satisfy employees' values, ambivalent identification occurs. If identification based on the contributing factor of a value proposition orientation subsequently occurs, the dimensions of identification multiply. These aspects of identification are not fixed permanently. They change as the unit's environment changes.

5.2 Relationships with Outsiders Affect Identification

Our framework also encompasses the influence of negative relationships with persons outside the unit.

The first influence is labeling. When societies deem people "deviants" and exclude them, those so labeled seek other deviants as congeners. If society continually rejects them, they amplify their deviant behavior and furnish their identity as deviants (Becker, 1963). Employees spurned for their membership in a unit are in the situation of deviants. Labeling infringes occupational ability recognition and affective recognition and reinforces unit identification because it bestows recognition on its members.

Second is the influence of insults and criticism. Positive appraisals from persons outside the unit enhance identification with it by enhancing attainment value, as noted in the literature of social identity theory. However, insults and criticism do not exert a linear negative influence on unit identification. Employees of Tokio Marine's marine hull unit were indignant over criticism of their unit while simultaneously being aware of its negative perception. Their response shows that interest values and/or attainment values had become incorporated into their self-concepts, and criticism reinforced their identification with the unit.

To sum up, negative external relationships exert complex influences on identification. Although not all respondents experienced labeling, insults and criticism, we should acknowledge that their influence is multifaceted.

5.3 Subsumption of Antecedent Factors in Existing Research

We now compare our theoretical framework and the antecedents of organizational identification in existing research.

Recent organizational identification research grounded in identity theory assumes people are motivated by self-enhancement (Takao, 2013). Our framework subsumes that assumption within value preferences. Antecedents related to interaction with coworkers (e.g., interactional justice and organizational socialization) are subsumed under occupational ability recognition and affective recognition. Ours is the first study to address the relation between a value proposition orientation and identification.

Existing research has examined antecedents of identification serially, and statically. Our theoretical framework positions them as elements in the long-term dynamic of identification and explains how and when they influence it.

6. Conclusion

6.1 Theoretical Contribution

This study makes three theoretical contributions to the literature. First, it presents a framework based on a case study to explain the long-term dynamics of identification with an organizational unit. As previous research treats aspects of identification as local and static, this is the first study to offer a long-term theoretical typological framework. The framework shows that occupational ability recognition and affective recognition are essential, necessary, and sufficient antecedents to identifying with a unit initially. Insofar as occupational ability recognition and affective recognition are satisfied, identification with a unit persists. Thereafter, value preferences multiply the dimensions of identification, reinforce identification, or render identification ambivalent. Ultimately, a value proposition orientation reinforces identification and multiplies the dimensions of identification as contributing factors.

Second, this study exposes the influence of negative input from persons outside the unit. Most research examines relations between an organization or group and its members or interactions among members. This study shows the complex influence of interactions between members and outsiders.

Third, this study positions several antecedents of identification in one theoretical framework that explains the long-term dynamics of identification with a unit. Previous studies treated these antecedents of identification respectively, locally, and statically.

6.2 Practical Implication

The study's practical contribution is in proposing a viewpoint that simultaneously maintains employees' unit identification in changing environments and forms adaptive business units when operating environments change. First, members' identification with a unit can be maintained in changing environments through continuous occupational recognition and affective recognition. However, the persistence of shared values does not necessarily engender or sustain identification among all employees and may impede adaptation in changing environments. Managers can create business units that meet environmental change by fostering diversity in values and strengthening a value proposition orientation among all employees, not merely senior employees who developed it as they mature.

6.3 Limitation

This research derives from a single case study and hasty generalization should be avoided. However, we presented a typological framework that hypothesizes about multiple aspects of identification rather than generalizing about patterns of identification. Second, this study examines a unit, not an organization, and the long-term dynamics of identification with organizations might differ from identification with units. We noted the importance of interaction with coworkers for identification with a unit. Perhaps such interactions characterize identification with lower-level groups, following Olkkonen and Lipponen (2006), who note a correlation between interactional justice and identification with work groups. Future organization-level research would enhance knowledge about the long-term dynamics of identification and refine insights by comparing organizational and unit identification.

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Notes

Note1. As an exception, Ashforth, Kreiner, Clark, and Fugate (2007) studied the relation between “dirty work” and identification.

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Auditing Standard Change and Auditors' Everyday Practice: A Field Study

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Abstract

The analysis of inertial phenomena in business context has been developed with reference to management and financial accounting (Hopwood, 1990; Hopwood and Miller, 1994). In the auditing field, however, only a few studies have attempted the inertial phenomenon (Salterio, 1996; Salterio & Koonce, 1997; O'Reilly, et al., 2004; Messier, et al., 2012). An opportunity to investigate more in depth the topic of auditing inertia is offered by the recent change of the auditing principles in Italy.

Stemming from the aforementioned consideration, this paper aims to analyze the phenomenon of auditing inertia making reference to a case of change in the auditing standards and procedures to which auditors refer to in performing audit works. In order to achieve this aim, a field study methodology was adopted.

The main findings are the following. First, it emerges that the reactions of the audit firms to the analyzed change of auditing standards are different. Second, the analyzed cases have shown that single auditors have undergone passively through the process of change. Third, the collected evidences also suggest some of the items that contribute to the adoption of an inertial behavior. Fourth, it emerges that the aim of the EU project, the harmonization and adaptability-flexibility of auditing procedures, is only partially achieved as sometimes occurs a substantial harmonization while in other cases it is only formal.

Keywords: auditing, change, audit practice, case study

1. Introduction

The analysis of change and inertial phenomena in business context has usually been developed with reference to management and financial accounting (Hopwood & Miller, 1994, Hopwood, 1990). Some scholars, indeed, have highlighted that against the possibility of adopting new practices and undermine the old ones, i.e. of innovating accounting rules and routines, accountants show a certain degree of resistance to changes (Barley & Tolbert, 1997, Burns & Scapens, 2000, Burns & Vaivio, 2001, Hannan et al., 2004, Zambon & Saccon, 1993).

In order to explain this phenomenon, among others, the ideas of institutional theory (Scapens, 1994), rules and routines (Burns & Scapens, 2000) and organizational memory (Becker et al., 2005, Winter & Nelson, 2009) have been introduced in the accounting issue. The way in which the inertia or resistance to changes manifests itself, depends on the strength of the connections between rules and routines: the more the existing rules and routines are strongly intertwined, the more the new rules are swiftly dismissed because they are inconsistent with existing practices (van der Steen 2009). While the phenomenon of accounting inertia has been already object of several investigations, the case that also auditing practices can be affected by inertia seems to have been overlooked.

In the auditing field, only few studies have attempted the inertial phenomenon, focusing on the role of previous experiences or on the effects on the auditing practice of a change in the accounting principles (O'Reilly et al., 2004, Salterio, 1996, Salterio & Koonce, 1997, Messier et al., 2012). The recent change of the auditing principles in Italy offers an opportunity to investigate more in depth the phenomenon of auditing inertia. As Member State of the EU, Italy has been involved in the harmonization process initiated by the EU and has adopted the EC Directive 43/2006 by means of Legislative Decree 39/2010, which has reformed the entire auditing legal framework, and thus it has also imposed the adoption of clarified ISAs as reference standards in conducting audit works. By this reform, the auditing practice in Italy moved from rules-based standards dictated by the national principles, to principles-based ones, i.e. the ISAs (International Standards on Auditing), dictated by the EU.

Stemming from the aforementioned consideration, this paper aims to analyze the relationship between auditing standards' change and auditors' everyday life, i.e. if and how auditors' behavior changes in dependence of a change in the auditing standards. Previous literature on the same topic suggests that the auditing standards system represents not just a set of techniques through which auditors conduct audit works, but rather it constitutes a set of organizational routines which legitimates auditors' behavior (Power, 2003). Thus, it becomes of interest to analyze if, how and why the auditing process changes, i.e. if an inertial or innovation-oriented behavior is adopted. In order to achieve this aim, a multiple case study methodology has been applied and the partners and the senior managers of some of the "Big 4" and "non Big 4" audit firms have been interviewed.

This paper is structured as follows. After a brief overview of the Italian audit environment, section three gives a brief review of the prior knowledge of the basic elements of the study, while section four gives a description and in-depth analysis of the collected empirical material. In the central part, an attempt will be made to understand the case findings and to develop the theoretical arguments of the study. Finally, some valuable insights are extracted and systematized in order to draw some conclusions and to propose future research opportunities.

2. Auditing Change and Auditing Standards: The State of the Art

In the auditing literature, the phenomenon of change seems to be poorly investigated even though auditing is an object of study since decades. In fact, researchers have focused mainly on the effects produced on the audit opinion by changes in the accounting standards applied by the audited companies (see, among others, Salterio & Koonce, 1997; Messier et al., 2012; O'Reilly et al., 2004).

This study starts from the assumption that auditing standards' system represents not just a series of techniques through which auditors may conduct their work, but also a set of preferences and organizational routines that legitimize auditors' behavior (Power, 2003). Pentland (1993) argues that auditing is a ritualistic and collective activity that brings order in a non-interpreted world and requires ritual procedures in order to produce trust in financial markets. Auditors, in fact, judge and attest the validity of corporate financial statements, which are stylized interpretations of a corporation's health. Accountants construct these interpretations, but auditors reassure stakeholders that they are trustworthy. According to this perspective, the legitimacy of audit rituals derives also from the distinction between the auditor and the client because of the assumption that the management acts opportunistically in disclosing corporate information, while professional auditors can be trusted in performing the steps of the audit ritual. In this respect, it is interesting the metaphor made by Pentland (1993) and Power (2003), according to which auditors act as ritual priests that transform the client's inherently untrustworthy explanations into inherently trustworthy ones. In such a context, therefore, the adoption of any change in ritual procedures depends on the legitimacy that auditors give to the new methodology (i.e. to the new ritual).

Regarding the role of "organizational memory" in auditors' everyday practice, Fisher (1996) has observed that auditors tend to rely heavily on past experiences as a guide in planning current audits. His study, indeed, has shown that auditors are reluctant to place reliance in new audit technologies and that they continue to rely on traditional sources of audit evidence even though they are also physically using new audit technologies. Basing on the studies conducted by Berger and Luckman (1966), Fisher (1996) articulates the audit process in three main phases. The externalization phase, in which auditing practitioners take actions when they plan the nature and the extent of procedures to be performed in a particular client situation, and then they execute those procedures and issue their audit report. During the second phase, named objectivation, auditors rely strongly on objectified knowledge (i.e. what they did the last year), so that the type and level of work that has been performed may come to be taken for granted and its appropriateness is not even questioned. Finally, auditors internalize the planned and executed level of audit work as knowledge of how to conduct an audit. This institutionalized knowledge can serve as a valuable guide to the auditor in carrying out his work; however, it may also severely constrain the auditor's ability to assimilate new sources of audit evidence. It seems to emerge, therefore, that the mere adoption of a new technology is not sufficient to ensure the achievement of purposed benefits (i.e. enhanced audit efficiencies). Rather, it appears that the efficiencies of the new approach could not be realized until practitioners accept that it provides sufficient evidence. In other words, the process of technical change requires that a new technology must be "real-ized" (i.e. made real) and thus legitimated by the actions of auditors (Fisher, 1996). Without this legitimation, states Power (2003), it is possible to find two audits, one dealing with compliance with the traditional structured approach, and the other only formally conducted and supported by new technologies. In this respect, it emerges that official guidance issued by standard setters plays a little role in auditors' everyday practice and that there is a gap between the official view of the audit process and what actually happens in the everyday audit practice (Humphrey & Moizer, 1990).

Summarizing, in the auditing field, because the legitimization of new practices is a complex process and there is a gap between the official and the real auditing practice, it becomes of interest to analyze how new auditing standards affect auditors' everyday activity, i.e. if a phenomenon of innovation/inertia occurs.

Newton's first law of motion states: "when viewed in an inertial reference frame, an object either is at rest or moves at a constant velocity, unless acted upon by an external force". In this study, we consider the auditing organizations, rules and routines as "the object" and the dictated change in the auditing principles as "the external force". Therefore, in order to understand the phenomenon of auditing inertia, it is important to focus also on this last element. Specifically, it is relevant to remember the differences between rules-based standards and principles-based standards and to explore how a change from the former to the latter has been defined and implemented in Europe, in general, and in Italy, in particular.

3. An Overview on the Audit Profession and on the Auditing Standard Setting Process in Italy

Knechel (2013) defines auditing as a profession awash in standards, which dictate how auditors should structure and perform their work and evolve depending on the changes in regulations as well as on the relative influence of the affected interested groups (Ye & Simunic, 2013). According to Jeppesen (2010), the general purpose of a standard is to limit or to direct the behavior of those who must comply with it, and this implies that the standard setting process inevitably has political implications. Adopting an actor network perspective, the author states that the standard setting process primarily aims to create social order by eliminating or limiting freedom of behavior. Because of this, any attempt to create a specific form of social order has to face an immanent resistance from those who give up their autonomy without getting an adequate degree of influence on the standards that affect their behavior.

In the Italian context, the first attempt to create a form of social order by means of a set of auditing standards was in 1981, when the National Council of Certified Public Accountants has released 18 auditing standards structured according to a rules-based approach. Each standard, indeed, provided technical procedures and operational methodologies that auditors must follow in order to audit the single financial statement items. These structured auditing standards have remained into force until 2002, when the Consob (the national oversight body of the Stock Exchange) has charged the National Council of Certified Public Accountants with starting a process of revision of the auditing standards in order to align them to the ISAs issued by the IAASB (i.e. the pre-clarified ISAs). Italian auditors, therefore, have experienced a radical change in the audit approach they must follow in performing audit works because ISAs were developed according to a principles-based approach, without any reference to technical rules or mandatory audit procedures referred to the single financial statement items.

In recent years, the European Commission (EC) has given answer to the need for a substantive harmonization in auditing practices and for a high quality of audit works within the European Union (EU) by means of the Directive 2006/43/CE, under which the EC has imposed the adoption of the ISAs for the European auditors. Moreover, in 2009 the IAASB has concluded the so-called Clarity Project, which aimed to revise and redraft the ISAs in order to improve their clarity and understandability, as well as to help the harmonization of auditing practices within the EU (Dennis, 2010). The EC, however, has not yet concluded the adoption process of clarified ISAs, so they do not have any legal imperativeness for European auditors. In response to the EC directive, the Italian legislator has issued the Legislative Decree 39/2010, which has reformed the entire legal framework. One of the most relevant interventions on this topic is represented by the provision according to which clarified ISAs must constitute the reference standards for every audit work. Specifically, the Decree impose the transition to a new set of auditing standards.

At the end of the Decree, however, the Italian regulatory body has set a batch of transitory rules according to which clarified ISAs do not have mandatory effectiveness for national auditors until the EC will not complete the process of adoption of the new auditing standards. Currently, therefore, Italian auditors must comply only with pre-clarified ISAs and only have the opportunity to apply the clarified ones, when their use increases the effectiveness and the quality of audit. Some professionals, however, have stated that, in conducting their works, auditors must comply also with the first set of auditing standards issued by the national Commission between 1975 and 1981, i.e. those developed according to a rules-based approach. In their opinion, in fact, the analytical procedures imposed by the first set of national standards constitute a significant practical reference for the profession and enable auditors to carry out their work with professional diligence.

Thus, it becomes of interest to analyze the differences between rules-based and principles-based standards, as some nations have experienced the transition from rules to principles or vice-versa because of the ongoing harmonization process of auditing practices promoted by the EC.

In general, the rules-based approach occurs when the standards impose technical rules and analytical procedures

that auditors must follow in performing audit works while a principles-based approach constitutes an approach where the standards propose only a “framework” without any reference to mandatory audit procedures that, therefore, can be defined by each user according to the framework.

Knechel (2013) observes that both rules-based and principles-based standards share the same goal, i.e. to guide auditors in providing reasonable assurance for the fair presentation of the financial report, in accordance with applicable reporting standards. Nonetheless, the two approaches affect differently the auditing practice and, according to the study conducted by Jeppesen (2010), they meet different degrees of resistance by the recipients of the standard setting process. If auditing standards have to create homogeneous auditing practices, states Jeppesen, they must become what Latour (1987) defines as “immutable mobiles”, i.e. objects that allow instructions to be spread from the center (the standard setter) to the periphery (the single auditor) without being altered throughout the process.

Starting from this perspective, therefore, the adoption of a rules-based approach or of a principles-based one in the auditing standards setting has a significant impact on the auditing practices as well as on the way in which auditors react to a new auditing standards system. In fact, some scholars state that the adoption of one of the two considered approaches implies not only the presence of formal differences between auditing standards, but also the definition of two completely different audit styles (Dirsmith & McAllister, 1982). Specifically, Dirsmith and Haskins (1991) make a distinction between a highly structured audit approach, named mechanistic, and a so-called organic audit approach that leaves more room for the exercise of auditor’s professional judgement.

The mechanistic approach is based on standards that not only provide mandatory audit procedures, but also impose the way in which the auditor must conduct these procedures (Burns & Fogarty, 2010). On the one hand, such an approach facilitates the homogenization of auditing practices, because the standards are based on a high level of “hard” and non-interpretable knowledge, thus they are less exposed to distortion when auditors must apply them in conducting their work. Moreover, the adoption of a mechanistic audit approach facilitates the legitimacy and the control of audit works, because it idealizes the audit process as a logical series of steps and models the audit process as a system of rules. On the other, however, these pre-determined representations of the audit process can never really inform the auditor what to do or substitute the auditor’s professional judgement (Francis, 1994). Finally, according to the analysis conducted by Jeppesen (2010), rules-based standards attract more resistance from the groups who must comply with them, just because rules cannot be interpreted and thus they leave scarce room for the exercise of auditor’s professional judgement.

Principles-based standards and the organic audit approach, instead, emphasize the exercise of auditor’s professional judgement in defining the more suitable auditing procedures related to the specific circumstances (Ojo, 2010). Standards developed according to this approach allow a certain degree of interpretation and thus they attract less resistance from the auditors who must comply with them because critics can interpret the standards according to their own preferences (Jeppesen, 2010). Principles-based standards, moreover, are broadly applicable and do not need constant modifications or additions; however, they do not create homogeneity in auditing practices and this implies a less comparability of the audit outcomes and a greater uncertainty with reference to the audit quality level. Finally, with principles-based standards, the inspection of audit works may become more difficult and dependent on subjective judgements (Burns & Fogarty, 2010). In all, moving from a principles-based auditing standards system to a rules-based one or vice-versa should lead to a change (i.e. an innovation) in the auditors’ everyday activity.

Summarizing, as Italy has recently experienced a change in the auditing standards system, it represents an interesting context in which observe if and how a phenomenon of auditing innovation or, on the contrary, of auditing inertia has occurred.

In comparison to the extant literature, this study sheds light on the phenomenon of auditing inertia which is far less investigated than the accounting inertia one (Hopwood, 1990; Hopwood & Miller, 1994). Moreover, this investigation does not analyze the effects of a change in the accounting standards on the audit profession (Messier, et al., 2012) but it is more centered in the “audit world” as it focuses on the relationship between auditing principles and auditors’ activity. Finally, this study deepens the analysis conducted by Jeppesen (2010), because it has been adopted a perspective of analysis that is downstream in the auditing standard setting process. While Jeppesen has observed the way in which standard setters can face the immanent resistance showed by the recipients of the auditing standards, this investigation aims to analyze if and how this resistance manifests itself as well as which are the underlying causes of auditors’ inertial or proactive behavior.

4. Design of the Study

Understanding the phenomenon of auditing inertia requires focusing on the practice of auditing, i.e. on what

auditors do in practice. More in depth, the underlying question of this paper is: have the auditors been proactive or inert against the opportunity offered by the new legislative framework of adopting clarified ISAs?

Despite concerns that case studies of specific situations do not afford results that may be regarded as generally applicable or generalizable, according to Yin (2003) the case study is an appropriate choice of method when the research area is explorative in nature. The case study method has been selected for this investigation because of its potential to provide a richer, more detailed understanding of specific phenomena (Eisenhardt, 1989; Yin, 2003), such as audit practices, which seem to be still under-investigated, at least from a field-study perspective (Power, 2003; Arena, et al., 2006; Humphrey, 2008). It could be argued that, in studying organizational change, it would be more appropriate to carry out a longitudinal study. However, some scholars argue that multiple cases enable comparisons that clarify whether an emergent finding is simply idiosyncratic to a single case or it is consistently replicated in several cases (Eisenhardt, 1989; Eisenhardt & Graebner, 2007), i.e. multiple cases allow observing companies in different possibilities of change (Greenwood & Hinings, 1988; Laughlin, 1991). Thus, this study is based on explorative case studies of six auditing companies.

The choice to focus this research on the Italian context is due to the following reasons. First, because of the opportunity offered by the EU directive and the national decree 39/2010. Second, the Italian context has been chosen as the author is Italian and thus she was able to develop good relationships with the interviewees. Third, the Italian accounting practice has been already object of investigations dedicated to the issues of change, innovation and inertia (Zambon & Saccon, 1993; Caccia & Steccolini, 2006; Paglietti, 2009).

Limited resources meant that the study could not cover all Italian auditing firms. Moreover, not all the contacted companies were willing to take part in the research. Finally, as this study is not based on a quantitative approach but on a qualitative one, it is not necessary to have a statistically relevant number of cases but, instead, to have cases that highlight differences. Thus, cases have been selected because of their suitability for the phenomenon under investigation (Eisenhardt & Graebner, 2007). The author had the opportunity to investigate three of the “Big 4”, 2 national auditing firms which belong to an international audit network as an independent member and a small local audit firm. The investigated companies are the only ones that accepted to be part of the research project.

Table 1. Case study organizations listed under a pseudonym, in order to guarantee their anonymity

Alpha	International auditing firm. Auditors of listed and unlisted companies and of SMEs
Beta	International auditing firm. Auditors of listed and unlisted companies and of SMEs
Gamma	International auditing firm. Auditors of listed and unlisted companies and of SMEs
Delta	National audit firm, belonging to an international audit network. Auditors mainly of unlisted companies and SMEs
Epsilon	National audit firm, belonging to an international audit network. Auditors mainly of unlisted companies and SMEs
Zeta	Local auditing firm. Auditor of SMEs

Although it may be objected that the study covers a very limited number of audit firms, it must be taken into account that the Italian audit market is highly concentrated (Note 1) (Cameran & Scimeca, 2016). The analyzed firms, therefore, allow a coverage higher than 80% of the entire audit market in Italy.

The main data-gathering technique was semi-structured interviews because the aim of the analysis was to reach a deep understanding of the phenomenon under research (Carrington & Catusus, 2007; van der Steen, 2009; MARC, 2010) and to compare the behavior assumed by auditors up against the opportunity of adopt clarified ISAs even though they still have no legal imperativeness. Each interview was designed to develop around two topics: organizational impact of the auditing standards' change (i.e. did they change something in the organization? Did they carry out specific training sessions? Did they change the relationship with the headquarters, in case of multinational companies? Etc.) and professional impact of the auditing standards' change (i.e. what did it change in your daily activity? What do you want/would like to change in your internal procedures? Etc.). Interviews were conducted during fall 2013-spring 2014 and lasted from one to two hours and were all tape-recorded and then transcribed for analysis. In each firm, two to three interviews were carried out with the partners and/or senior managers of the firm.

The analysis of the evidence was carried out in three phases. First, preliminary documentation of each case was used to priori identify the companies' pattern of change (see Table 1). Once data collection was completed, the research team analyzed all the evidence of each organization, in order to investigate whether they matched the theoretical model developed in section two, and produced an individual case report. In order to overcome bias, analysis was carried out through analyst triangulation (Patton, 1990; Yin, 2003). Two members of the research team, always different from those who carried out the interviews, analyzed the data. Finally, all the individual case reports were discussed, following a theoretical replication design (Yin, 2003).

5. The Case Study

The interviews were designed around two main topics. The first issue has concerned the organizational impact of the transition to the new set of auditing standards. Specifically, respondents were asked if this change has determined the need for specific training sessions in order to reach a deeper understanding of the new auditing standards system and, for multinational companies, how the change has influenced their relationship with the headquarters. The second main topic addressed with the interviewees has concerned the professional impact of the auditing standards change. In other words, respondents were asked whether the adoption of ISAs has determined any change in their everyday professional practice. The analysis revealed that the audit firms involved in the study have faced the auditing standards' change in a rather different manner, partially due to their different organizational complexity.

5.1 The Organizational Impact

The first matter worth of notice is that almost all respondents have stated that the change in the auditing standards' system has determined the need to revise the overall audit approach. In this respect, one of the senior manager of Alpha affirmed.

«With the first adoption of ISAs in Italy in 2002 (ISA pre-clarified) there has been a real change in the audit approach. The focus of the analysis, indeed, has shifted from the single financial statement items to a more risk-based approach. Auditor is required to value more the riskiness of financial statement as a whole, than the accuracy of the balance sheet accounts, considering also the needs of both shareholders and stakeholders. Shareholders and stakeholders, indeed, are more interested in firms' risk profile, within which they are directly involved, also with their own financial resources» (a senior manager of Alpha).

A senior manager of Beta and one of Gamma have expressed the same opinion, stating, respectively:

«Actually, the real change in the overall audit approach has happened more than ten years ago, with the first adoption of ISA, in their pre-clarified version. In 2002 indeed we shift from a set of auditing standards which imposed a batch of check lists in order to audit each single financial statement item, to a set of auditing standards according to which the audit engagement must be conducted following an overall audit strategy. The real innovation, therefore, was represented by the central role assumed by the auditor's professional judgement in evaluating several aspects of the client firm (i.e. the internal control system, the control environment etc.) in order to define a suitable audit strategy and to develop an audit plan» (a senior manager of Beta).

«The most relevant and, at the same time, the most complex activity within an audit engagement is the preliminary evaluation of client's level of risk» (a senior manager of Gamma).

Differences emerge, instead, when considering one of the national audit firm, which is generally charged with the audit of unlisted companies and SMEs. One respondent from Epsilon, indeed, has stated:

«With the introduction of ISAs, there has been definitely a greater attention to analyze the internal control procedures of the client firm and its risk profile, but this tendency depends much on the type of audited firm. Risk analysis is highly effective when the audited firm is a big company, while the audit of SMEs should be focused more on substantive analyses» (a partner of Epsilon).

This might suggest that a change in the set of auditing standards has a different impact on the overall approach of each audit firm depending on the fact that we are considering a multinational or a local audit firm. Moreover, the audit approach seems to vary depending on the type of client firm. In fact, multinational audit firms (Alpha, Beta and Gamma) have experienced a relevant change in the audit approach, and they have shifted from the audit of the single financial statement items to the analysis of the client's risk profile in order to define a suitable audit strategy according to the auditor's professional judgement. The national audit firm, instead, has formally recognized the change determined by the adoption of ISAs, but this has not implied a change in its audit approach due to the type of audited firms, which are mainly SMEs and thus they require an audit approach that is more focused on balance sheet accounts than on risk assessment.

Another significant difference emerges with reference to the way in which companies have faced this change in the audit approach. In other words, it emerges that firms react differently to the same "external force". All respondents, except those from Zeta (the small local audit firm), have pointed out that, as a consequence of the transition to ISAs, it has emerged the need for specific training sessions in order to improve auditors' understanding of the new auditing standards system.

«We attended a specific training session about the new auditing standards, especially because inspections on audit work, both internal and external (i.e. conducted by the headquarters or by Consob), are focused on the auditors' degree of understanding and awareness about the applicable auditing standards, rather than on the adequacy of auditing procedures» (a senior manager of Alpha).

«A proper education is the real center of the audit profession. When ISAs (the pre-clarified and the clarified ones) were introduced in Italy, our firm has imposed a specific education course with two different objectives. On the one hand, it aimed to improve our understanding of the new set of auditing standards and, specifically, of the changes linked to the adoption of the new standards system. On the other, moreover, the course aimed at identifying the new audit procedures that we must apply in conducting audit engagements. In fact, in order to comply with the international policy imposed by the headquarter, we must have a deep understanding of the auditing standards on which our audit procedures are based» (a senior manager of Beta).

The partners of the national audit firms, which however belong to an international audit network (i.e. Delta and Epsilon), expressed the same opinion:

«We started to attend education courses since the introduction of ISAs in Italy. Our company, indeed, was involved in the team charged with the translation of the guidelines issued by the IFAC for the application of clarified ISAs in the audit of SMEs. Moreover, a specific internal education course was started by the international network to which we belong» (a partner of Delta).

«The research unit of our company is responsible for the adoption and the diffusion to the staff of the information about the new auditing standards. Moreover, the inspections of the oversight body (the Consob) aim to assess the auditors' degree of awareness about the auditing standards system» (a partner of Epsilon)

Respondents from Zeta, instead, affirmed:

«We didn't do anything special, just the normal courses, nothing more intense...at the end we use the same procedures as before, as they are already ISA-compliant» (a senior manager of Zeta).

The way in which auditors perceived the change in terms of training needs is not the same. The need for a specific education course about the new set of auditing standards has concerned all the bigger audit firms, which have an international imprint (multinational audit firms and firms that belong to an international audit network), while the local audit firm has not perceived any need for a deeper understanding of the new auditing standards. Thus, while Alpha, Beta, Delta and Epsilon approached to change in a proactive way (developing their understanding through training courses), Zeta seems to adopt a sort of "passive resistance", where the organization did not try to develop a deeper understanding of the new standards or consider them as an opportunity, but has continued to use the same rules and routines as they were compatible. With reference to the parallelism with Newton's law, it seems that Zeta has adopted an inertial behavior, keeping its position of rest or developing its activities with the same velocity.

Again, we might argue that the perception of the change and the need for specific education courses varies depending on the size of the audit firm and on its degree of internationalization. Multinational audit firms as well as those belonging to an international network have perceived the need for a specific education because of two main reasons. First, according to all respondents, a proper understanding of the current auditing standards system is essential to comply with the obligation imposed by the oversight body. Auditors' liability as well as audit quality is evaluated with reference to the degree of compliance with the applicable auditing standards. Second, the international policy imposed by the headquarters of multinational audit firms or by the network to which the audit firm belong requires that auditors have a deep understanding of the standards on which auditing procedures are based. The local audit firm, instead, is not subject to an international policy, thus it does not perceive an urgent need for a specific training about the new set of auditing standards.

Another difference has emerged also with reference to the way in which audit methodologies are defined, revised and shared within the organization. The headquarters of Alpha and Beta, as multinational audit firms, issue practical guidelines regarding audit methodologies that local offices must apply in their daily practice. One of the respondents of Alpha, indeed, has affirmed that:

«The company's headquarter issues mandatory guidelines, which impose the overall methodology in valuing the client firms' degree of riskiness and the mandatory analytical procedures that each national office must apply in conducting its work. These guidelines are particularly binding, so that whether local

offices do not intend to apply a specific audit procedure, they must be authorized by the headquarter» (a senior manager of Alpha)

«Our company is an international audit network, thus we need to standardize as much as possible our auditing practices. Because of this, we conduct audit works according to the company's international policies. The audit guide issued by the headquarters imposes mandatory rules that we must follow throughout the entire audit process. Each national office, however, integrates the overall audit guide with a distinct library, which includes all the integrations prescribed by national regulation. Each rule imposed by the central office must be applied during the audit work, unless the auditor does not give a great emphasis to the circumstances because of which a specific rule cannot be applied. Anyhow, it is necessary to start a consultation process with the risk management unit of the company that must approve the non-application of a specific mandatory rule» (a senior manager of Beta).

It emerges that Alpha adopts a strictly top-down approach where the practical rules and routines are defined by the headquarters and the local offices and the single auditors can only undergo them, without any active role; their subjectivity is thus irrelevant and auditors can just move from an inertial position to another. Although also Beta adopts a top-down approach in elaborating and sharing the audit rules and routines within the organization, the local offices are involved in this process and thus they gain an active role, while only the lower level of the organization (i.e. the single auditor) keeps its passive position.

Somewhat different, instead, is what respondents from Delta and Epsilon have said. Indeed, they have stated respectively:

«The development of audit methodologies is mainly internal. Every three years, however, the international network carries out an inspection on our methodologies in order to ascertain their quality and their consistency with the applicable auditing standards system. However, this represents mostly a technical support and it does not impose any restriction in the choice of the audit approach» (a partner of Delta).

«We belong to an international audit network as an independent member. The network only provides an overall audit guide that may be applied by each audit firm belonging to the same network. The single independent units of the network, therefore, adapt this audit guide to the peculiarities of each national context and issue a specific audit guide» (a partner of Epsilon).

In this case, the surveyed audit firms seem to have a more proactive role than multinational companies (such as Alpha and Beta) in the development of audit methodologies, as an audit innovation up against a change in the auditing standards system might be realized also within the single audit firm, not only at the central office level.

Completely different, instead, is the position of Zeta, whose respondent stated:

«As local audit firm the development of methodologies which inform the audit works does not follow a structured approach but represents a flexible process in which the personal judgement of each auditor plays a primary role» (a senior manager of Zeta).

Lastly, in Zeta, probably due to the lack of competences in structuring processes and to the idea that their competitive advantage relies on the fact that they can be more flexible than big companies, all the members of the organization seem to have an active role.

In summary, the size of audit firm as well as the degree of organizational coordination within the network to which the audit firm belongs seems to play, also on this topic, a primary role in influencing the way in which audit methodologies are defined and shared within the organization. Multinational companies, highly integrated under an organizational perspective and coordinated by their headquarters, seem to adopt a top-down approach in defining and sharing audit methodologies. As the respondents affirmed, the headquarters of the company elaborates and distributes a binding audit guide to the entire organization, and leaves more or less leeway in adapting and in integrating it depending on the needs arising from national peculiarities. Audit firms, which belong to an international audit network as independent members, instead, seem to adopt a different approach. In fact, each firm internally develops its own audit methodologies, while the network offers technical support and supervises the internal audit guide in order to verify its consistency with the international audit policy of the network itself. Finally, completely different seems to be the approach adopted by the small local audit firm, which follows an un-structured approach in defining audit methodologies, where the auditor's professional judgement plays a primary role. The auditor, indeed, develops and applies the most suitable audit methodologies depending on the circumstances of the single audit engagement, without following any binding audit guide.

In sum, it may be argued that the bigger the size of the audit companies and the more the headquarters or the

network coordinates the organization, the more the process of development of the audit methodologies is structured and the less is the independence of the single national audit firm in defining and in adapting them to local peculiarities.

Another interesting aspect emerged from the interviews is the fact that even if ISAs are based on a principles-based approach in order to allow auditors to adopt the most suitable audit procedures in each context, it seems that auditing companies seem to prefer tight routines, i.e. to be regulated by rules-based standards:

«It's a matter of legal liabilities...if we use the previous procedures, as they were approved by the Consob and by the National Auditors' Association, nobody can say anything against us while if you start personalizing or changing you cannot be sure... Moreover, the previous standards are compatible with the ISAs» (a senior manager of Gamma).

«Essentially, the most relevant impact of the adoption of clarified ISAs is linked to the possibility of lightening audit procedures that were regarded as mandatory according to the auditing standards previously in force (and even more according to the standards issued since 80s by the National Auditors' Association) and according to the regulations issued by the Consob. Even if we have a new set of auditing standards, we continue to apply the same audit procedures as before, because we consider them essential in collecting information about the fairness of the clients' financial statements. ISAs, however, allow us to have greater flexibility, mainly in defining samples upon which we perform the audit procedures» (a partner of Delta).

«The adoption of ISAs has put greater emphasis to the assessment of clients' risk profile, however essentially we continue to apply the same audit procedures because we believe that they represent the best way to collect audit evidences about the fairness and trustworthiness of financial statements. Moreover, talking about an innovation in auditing practices is more a theoretical issue than a practical one. Whether, on the one hand, the ISAs enable auditors to define the most suitable audit strategy depending on the client's level of audit risk, on the other we must consider what type of client we have. Our firm, indeed, is usually charged with the audit of SMEs, and this implies the need for performing substantive audit procedures, which provide better results than the mere analysis of the risks and compliance procedures» (a partner of Epsilon).

«I was working before for a Big4, so I'm still in touch with some of my previous colleagues. If they didn't change anything, why shall I? Changing might be risky and expensive and as we are a small company we cannot effort either one or the other» (a partner of Zeta)

It may be argued that the possible causes of auditing inertia can be summed up to the following: legal liabilities, auditors' past experiences and organizational costs. Almost all respondents, indeed, refer to the fact that the Italian oversight body (the Consob) performs controls on audit quality valuing the compliance between the audit procedures implemented in the audit engagements and what is asserted by the auditing standards. Thus, according to the surveyed auditors, to not apply the audit procedures already recommended by the Consob (although they are no more mandatory since the entry in force of pre-clarified ISAs) constitutes an unacceptable risk because they might be considered liable both in the case of supervision of audit quality and in case of litigation. Moreover, the firms usually engaged in the auditing of SMEs assert that those audit procedures, applied since decades and previously regarded as mandatory, constitute the best way to perform a financial statement audit. Finally, the smallest firm emphasizes the lack of the competences needed to cope with a change in the auditing procedures as well as to the need to contain the organizational costs linked to the change itself, which may lead to a deterioration of the audit quality.

5.2 The Professional Impact

Regarding the professional impact of auditing standards change, i.e. the changes in the everyday practice of the auditors determined by the adoption of clarified ISAs, the author has first investigated how the surveyed audit firms have faced the provision of adopting clarified ISAs, given that they have no legal imperativeness in Italy, since the EC does not complete their adoption process. Secondly, we investigated if the adoption of the new set of auditing standards has determined a change in auditors' everyday practices. On this topic, different scenarios have emerged. The central offices of both Alpha and Beta define binding guidelines in order to perform audit engagements and impose mandatory analytical procedures. As highlighted by some of the respondents:

«We continue to apply the auditing standards recommended by the oversight body, i.e. the pre-clarified ISAs, because this represents both a formal and a substantial obligation. We do not take into account the provisions of clarified ISAs. We must perform all mandatory procedures imposed by the headquarter.

However, we also have the possibility to apply additional audit procedures according to the client firm's level of risk as determined in the preliminary phase of auditing. What has changed in practice is that, whereas in the past each financial statement item was audited on the basis of a materiality threshold, now you must look primarily at the risk profiles, which represent the basis according to which the definition of audit procedures takes place» (a senior manager of Alpha).

«Until the regulation does not formally impose the adoption of clarified ISAs there is a formal and substantive constraint in applying auditing standards approved by national standard setter (i.e. those issued according to pre-clarified ISAs). Auditors' legal liability, indeed, is mainly related to the degree of compliance with applicable auditing standards» (a senior manager of Alpha).

«In performing audit engagements, we apply the clarified ISAs according to the international policy imposed by the headquarters. Each national office, however, integrates the overall audit guidelines with all the procedures required by the national auditing standards. Therefore, the audit engagements must be performed according to both clarified ISAs (as imposed by the headquarters) and the auditing standards currently in force in Italy (pre-clarified ISAs) and this is possible integrating the auditing procedures issued by the central office with those required by the Consob» (a senior manager of Beta).

It appears to emerge that, although multinational companies must follow the international policy imposed by the headquarters, they keep applying pre-clarified ISAs because of the lack of a mandatory legal provision and because both audit quality and auditors' liability are assessed making reference to pre-clarified ISAs.

«After a cost-benefit analysis, we started to introduce some audit procedures based on clarified ISAs. In particular, one year ago we have introduced an audit software, shared with the our international audit network, developed according to clarified ISAs. It must be considered, however, that from a substantive standpoint no relevant changes have emerged in comparison with the audit procedures previously implemented and defined according to pre-clarified ISAs» (a partner of Delta).

«We did not experienced any relevant change with the introduction of clarified ISAs. I don't perceive any change in my everyday practice because we perform the auditing procedures always in the same manner and this happens because there is no other way to perform them. Maybe something has changed...but it is more in the formal aspects than in the practical ones, because the essential auditing procedures will always remain the same» (a partner of Epsilon).

Although national audit companies have more autonomy in defining their audit methodologies and procedures, they seem to keep following the same audit procedures in their everyday practices because they do not perceive a real benefit in changing the procedures they have always followed.

On the same topic, respondents from Zeta have observed that:

«Given that we have limited resources and that we are not part of an international organization, although the adoption of ISAs has resulted in a change in the overall audit approach, we did not experienced any substantive change in the analytical procedures applied in order to issue the audit opinion» (a partner of Zeta).

Finally, the local audit firm assumes an inertial behavior because of the lack of both economic and organizational resources.

In sum, it seems to emerge that auditing companies operate in a kind of inertial reference frame due to different causes: the lack of mandatory legal provision, the conviction that a change in audit procedures does not lead to an improvement of the audit effectiveness or the audit quality and, finally, the scarceness of the resources needed to face a change in the overall audit approach.

6. Discussion and Conclusions

Power (2003) refers to auditing practice as a self-regulating system, whose components (training programmes, professional standards, quality control sub-systems, and disciplinary mechanisms) are an interacting, semi-institutionalized and loosely coupled whole. The analysis of the cases previously described shed a light on how this whole innovates or remain inertial when an external force, represented by a new set of mandatory auditing standards, is applied.

The aim of this paper was to analyze the relationship between auditing standards' change and auditors' everyday life, i.e. if and how auditors' behavior changes in dependence of a change in the auditing standards determined by the adoption of the EC Directive 43/2006.

First, it emerges that the reactions of the audit firms to the analyzed change of the audit standards are different as

they vary from completely inertial behaviors to more proactive approaches, depending on the fact that the focus of the analysis is the headquarters or the local branches of multinational audit companies. Indeed, it seems possible to argue that a change in auditing standards' system has determined a proactive (or innovative) behavior only at level of head office of multinational audit firms, where new guidelines and new procedures are developed. National auditors, which are restricted to implement what has been imposed by the headquarters, with limited rooms for the exercise of their professional judgement, have assumed an inertial behavior. Thus, single auditors can only move from some rules and routines to others with no possibility of innovation unless dictated by the international headquarters. It is possible to find a more proactive behavior when analysing national audit companies, which belong to an international network as independent members. Audit innovation, in fact, may occur not only at the central office level, but also within the single audit firm, as the network only offers supervision and technical support with reference to the overall audit methodologies internally developed by each firm of the network. Finally, in the smaller and local audit firms, on the one hand, the leaner organizational structure allows every single auditor to exercise his professional judgment in defining firm-specific analytical audit procedures, on the other, the scarceness of resources, both financial and professional, determines the adoption of an inertial behavior.

Following Fischer's (1996) schema of the audit process, with the transition to ISAs, the headquarters of Alpha and Beta have given rise to an innovation in the externalization phase (i.e. the phase during which the audit work is planned and the audit methodologies are defined). National offices of these companies, instead, take part only in the objectivation and internalization phases, during which auditors implement the guidelines and procedures imposed by their central offices, which thus become institutionalised knowledge. In summary, audit innovation may be considered as very limited and reserved activity, where the headquarters take the opportunity for change and create new rules and organizational routines, which encase single auditors' action in an inertial behavior. With reference to Delta and Epsilon, instead, audit innovation is not only reserved to the network to which they belong, as each firm has great autonomy in the development of audit methodologies and procedures and in creating new rules and organizational routines. In this case, therefore, the single audit firm takes part in every phase of the audit process stylized by Fisher (1996).

From the analysis of the interviews, also the possible causes of auditing inertia emerge. More in depth, the "legal liabilities", i.e. the risk of being involved in litigation due to a mistake, represents the first cause. As stated by Power (2003), auditing practice is based on legitimacy and a change (with possible mistakes) would risk a loss of it. Moreover, as "old" procedures are tested, consolidated and known, a change is perceived as a step towards uncertainty, i.e. something negative for the company (e.g. the new stated procedures do not work adequately) or for the auditors themselves (e.g. they did not apply the new stated procedures properly as they did not know/understand them well enough). As Pentland (1993) argues, auditing is the 'certification of the unknowable' that requires ritual procedures to transform indeterminacy into institutionalized order. Mining the procedures would imply the impossibility to achieve the desired order and thus audit would risk losing its function. In all, a change is perceived as a source of possible loss of legitimization and reputation (external – organizational dimension) and of problems in the daily practice at a personal level (internal/individual dimension). Thus, regulation of auditors' legal liability represents one of the main constraints to audit innovation.

Second, auditing inertia may occur also depending on the size of the client firms and on the institutionalized knowledge of the auditor. When the audited firm is a SME, indeed, the audit approach defined according to ISAs and based on the assessment of client's level of audit risk is considered less effective than an audit approach based on substantive procedures, as that defined according to a rules-based set of auditing standards. In this respect, indeed, respondents from Delta and Epsilon (generally charged with the audit of SMEs) have affirmed that changing the audit procedures they always have performed does not lead to any substantive benefit in the audit work. This is consistent with Fisher's (1996) assertion, according to which no technical change may occur in audit profession, until it is accepted and "real-ized" by practitioners.

Another possible cause of auditing inertia is represented by the effective and potential costs of a change. As auditing is a ritualistic and collective process (Power, 1999; Power, 2003), moving to new procedures requires investing in time, training activities, redefinition of internal rules and routines, etc. According to the collected evidence, it emerges that while in multinational companies as well as in the audit firms belonging to an international network the costs linked to the change are perceived as less than the benefits related to an international harmonization, in the local company the cost-benefit relationship is inverted. In all, the cost factor seems to be a hurdle against innovation.

Finally, there is the dimension related to the available competences. While big firms can count on R&D offices and thus they have (potentially) competences for developing rules and routines according to changing standards,

small companies seem to have difficulties in defining their own procedures and thus they tend to replicate what bigger companies do. Consequently, small companies tend to be inertial and to change only when it cannot be avoided.

In light of the above, it may be argued that the aims set by the EC Directive 43/2006 have been only partially reached. While auditing standards was harmonized in some companies, most of the auditors prefers to have rules-based standards that dictate tight procedures rather than having the possibility to define tailor-made auditing procedures. More in depth, in Alpha and Beta, national branches of multinational audit firms that have adopted a proactive approach, the implementation of the ISAs has determined an innovation in the guidelines and methodologies issued by the head office of the firms. Thus, it has been realized a substantive harmonization of the audit practices, as advocated by the EC. In the other cases, instead, due to a more inertial behavior or to dimensional and resource issues a more formal (and not substantive) change of the audit approach seems to emerge. In all, it is also possible to conclude that, in order to have an auditing innovation, it is first necessary a change in the audit legal framework, because the assessment of auditors' legal liability depends on the degree of compliance of audit works with the auditing standards' system legally in force.

The results have both theoretical and practical implications. First, this study contributes to auditing literature, as it reflects on a still neglected issue, i.e. auditing innovation/inertia. Moreover, it provides a starting point from which it is possible to deepen qualitative research on "audit in practice", as suggested by several authors (Humphrey, 2008; Power, 2003). From a practical point of view, instead, the conducted analysis may be useful for both professional and regulators, as it provides a picture of the state of play in audit environment.

The study has, however, several limitations linked, first, to design of the study. It will be useful, therefore, further research conducted according to different sampling approaches as, in example, longitudinal case study.

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Notes

Note 1. From the response given by the National Council of Corporate Public Accountants to the 2010 EU Green Paper "Audit Policy: Lessons from the crisis".

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Corporate Social Responsibility and Facebook: A Splashy Combination?

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Abstract

Literature widely explores Corporate Social Responsibility (CSR), Online Social Networks and consumer behavior individually. However, research linking them has been scarce. Therefore, this study aims to assess the effect of CSR information provided through Facebook on consumers' brand image and purchase intention, considering the role of consumer's product involvement. A fictitious brand profile "Splash Citrus" was designed for an online experiment conducted with participants from two countries, Colombia and the Netherlands, studying the effect of the stimulus, communication channel, Facebook versus Video commercial, on purchase intention and brand image. There was evidence that participants receiving CSR information through Facebook have a higher Brand image than participants receiving information through a video commercial. This effect on brand image appears particularly in higher product involved participants. Cross-cultural values did not affect these relationships. CSR and Facebook thus seem a splashy combination allowing managers to implement innovative strategies to achieve financial, social, and, environmental sustainability.

Keywords: corporate social responsibility, online social networks, Facebook, cross-cultural values, consumer behavior

1. Introduction

Corporate Social Responsibility (CSR) and Online Social Networks (OSNs) are topics that have received priority attention by business, ethics and communication management researchers, and have been part of recent frameworks, strategies and regulations. Researchers studied firms' motivations to engage and effects of CSR programs on several levels, including consumer behavior. There was also focus on the role of social networks as new priority communication channels for companies to identify new market trends and to launch marketing and communication strategies. Especially, Facebook has become one of the most powerful social networks, as the majority of large companies are using it not only as a key marketing tool, but as a channel to achieve some of their strategic objectives.

Although CSR and OSNs and their effects on consumer behavior have been widely studied individually, academic research is scarce addressing their link and effects. This study aims to cover this gap, by analyzing the effect of a firm's Facebook profile as communication channel for CSR information in Colombia and the Netherlands on consumers' brand image and purchase intention, and the mediating influence of product involvement in this.

1.1 Corporate Social Responsibility (CSR)

CSR has been the topic of many scientific enquiries and although there is no consensus regarding its definition, it covers "situations where the firm goes beyond compliance and engages in actions that appear to further some social good, beyond the interests of the firm and that which is required by law" (McWilliams, Siegel, & Wright, 2006). In addition, that CSR's contribution is to achieve sustainable development (United Nations, 2007) that meets the needs of the present without compromising the ability of future generations to meet their own needs (Brundtland, 1987). Ideally, a business can achieve sustainability when developing the "triple bottom line": economic prosperity, environmental quality and social justice (Elkington, 1997). Based on these sources we use as working definition for this study: Firms involve in CSR when they develop actions, strategies, or programs aimed to contribute to the social and environmental wealth of the world through the involvement of their

stakeholders, while maintaining or improving the economic wealth of the company.

However, increased regulations demanding all actors to support the good of society, pressure for customer markets, and pressure from the financial market may also explain the increased involvement of firms in CSR (Nieto & Fernandez, 2004). CSR actions, programs and strategies generally developed by companies are addressed to reduce harm and improve societies' welfare and way of living. Successful firms need a healthy society, assuring environmental quality by taking actions towards the efficient utilization of land, water, energy, and other natural resources (Porter & Kramer, 2006). Besides, a common form of CSR activity is the cause-related marketing, which involves a company donating a certain amount of money to a non-profit organization and/or a social cause (Nan & Heo, 2007).

So, companies do not get involved in CSR entirely for just voluntary reasons, but also because the general public and customers expect them to respond to issues that are part of their business responsibilities (Porter & Kramer, 2006), and because CSR including values and ethical codes help them to increase competitiveness, gain added value, improve human resource management, avoid the repercussions of bad publicity that could affect the customer decision and reduce firms' shareholder value (Doh & Guay, 2006; Fuentes-García, Nunez-Tabales, & Veroz-Herradon, 2008; Graafland & Eijffinger, 2004).

Consumers are increasingly interested in corporate activities that go beyond the economic aspects, or compliance by law, but that deal with environmental and social issues (Bigne, Andreu, Chumpitaz, & Swaen, 2006). After their experimental research Nan and Heo (2007), concluded that an ad including CSR components had a positive effect on consumers' attitude towards the company, regardless brand consciousness and fit between the social cause and the brand. However, Porter and Kramer (2006) assume that companies that develop CSR programs only to satisfy external pressures, end up in "a series of short-term defensive reactions" with no impact in society and in the firm's strategy. Consumers will sponsor firms when they perceive CSR actions are not related to their financial objectives as a firm, but rather are an expression of their social motivation (Barone, Miyazaky, & Taylor, 2000; Becker-Olsen, Cudmore, & Hill, 2006). Hence, CSR communication strategy should be transparent and communication to the public must be felt as true and authentic, rather than mere advertisement or public relations (Graafland & Eijffinger, 2004). These findings therefore evidence the need for an important emphasis on the 'company-to-consumer' communication involving CSR components (Singh, Del Mar García Sanchez, & Rodriguez, 2008).

1.2 Online Social Networks (OSNs) and Facebook as Marketing and Persuasive Tool

The increase of people using OSNs as part of their personal and professional relations is related to the development of the Web 2.0, based on ethical assumptions about media, culture, and technology that encourage people, to use digital media to express and realize themselves, and to define public discourse (Sholtz, 2008). This allows for greater interaction between internet users and enhances relationship building with unprecedented human-to-human interactions in internet history (Grabner-Kräuter, 2009). OSNs enable firms to monitor emerging changes in social behavior (Cachia, Compano, & Da Costa, 2007), and to "humanize themselves" (Levy, 2010), and to directly interact with a single consumer.

Facebook is not only the most popular and larger OSNs (it crossed the 1 billion-users line; Fowler, 2012; with 1.65 billion monthly active users in the first quarter of 2016; Statistica.com, 2016) but also is the second most popular website in the world after Google.com. Its users include people from all ages, but the highest representation is within the ages of 18 to 34 years old (Alexa, 2011). Facebook helps users to maintain a large network of friends, and to enhance their social capital (Steinfeld, Ellison, & Lampe, 2008).

Facebook as an OSN allows companies to persuade consumers through its interactive and dynamic platform developing communities, facilitating a closer relation, tending to favor companies with which they feel identified (Becker-Olsen et al., 2006). Interactivity empowers a business to engage with the consumers in individual dialogues, developing relationships that can become stronger over time (Godin, 1999), hence producing a stronger effect in purchase intention and brand image than any other traditional media such as TV and printed advertisement, and non-traditional media such as Web Pages, blogs and e-news. Besides, an interactive platform is cost-effective and allows the company to conduct millions of individual dialogues, each consumer at a time (Godin, 1999).

The information provided through Facebook allows users to reach a wide number of people that cannot be compared with any other media; "Facebook provides the perfect opportunity to humanize your brand" (Levy, 2010).

Given these attributes of Facebook, and the theory discussed, it is assumed that CSR information that reflects the firm's social motivation will have a higher effect on purchase intention and brand image in consumers if

presented through Facebook than through other (non-personal) communication channels. This leads to the first hypothesis for this study.

Hypothesis 1: *Consumers receiving CSR information through Facebook will have a higher brand image and purchase intention than consumers receiving the information through other (non-personal) communication channels.*

1.3 Consumer Involvement in Facebook

Consumers take information from ONSs in order to take decisions regarding their purchases (Pookulangara & Koesler, 2011), to form their expectations and preferences (Solomon, 2007). Not much literature has been developed relating the use of ONSs to the process of consumer behavior. Nevertheless, ONSs allow an interactive dialogue involving a product and consumers, inviting them to participate in advance in selling a product, rather than interrupting their daily grind with a video commercial or a marketing call, by what Godin (1999) calls "Permission Marketing", which is more successful than "interruption" strategies. A consumer decides to participate in this dialogue by becoming a Fan or member of a group provided by a firm, a brand or a product.

This action of consumers taking the decision of becoming a fan or a follower of the company, or accessing the firm's website to obtain specific information requires a certain level of involvement. This concept relates to the relevance provided by the consumer to a product or brand, advertisement or a purchase situation referred as "objects", based on his needs, values and interests (Zaichkowsky, 1985). It can be related to the amount of motivation to process information, and to attention given to this information in the purchasing process (Solomon, 2007).

Therefore, when a consumer chooses to access a webpage, or become a fan or follower of a specific firm, it can be inferred that s/he has a higher brand or product involvement in comparison to others who decide not to follow the page. Hence, the effect of the information provided through Facebook requires a higher level of brand/product involvement as required for information transmitted by traditional media such as TV, news, magazines, or newspapers. Furthermore, Facebook calls for similar levels of involvement as required for using Web Pages, blogs, and other OSNs, since these also call for an active stance, motivation and interest of the consumer to get access and process information. Therefore we formulate the second hypothesis of this study.

Hypothesis 2: *Lower in comparison to higher product involved consumers, have a lower positive effect of Facebook as a communication channel of CSR information on their purchase intention and brand image.*

1.4 Cross-cultural Influences

The cultural background of consumers may influence the way they use social networks for information (Pookulangara & Koesler, 2011), their brand recognition, and their opinions about brands or products.

Hofstede (2001) coined one of the most frequently used frameworks for cross-cultural analysis in CSR and business ethics-related issues. This framework is used when the aim is to analyze how the five cultural values influence the different CSR approaches within countries: Power distance, uncertainty avoidance, individualism vs. collectivism, masculinity vs. femininity, and short vs. long-term orientation.

Considering the relevance of cross-cultural values, this study includes two cultural values as control variables which, according to Hofstede (2001), are more likely to affect CSR-related decisions by the consumers: Individualism versus Collectivism, referring to the relationship between the individual and the collectivity that prevails in a given society, represented in the way people live together; and the Masculinity versus Femininity dimension, implying how biological differences affect emotional and social roles of the gender.

2. Method

2.1 Online Experiment

An online experiment was conducted to test the hypotheses on the effect of the communication channel of CSR information on consumer's purchase intention and brand image, and the interaction effect of the role of product involvement in these relationships. The fictitious brand profile "Splash Citrus" was created to control for participants' prior learning and experiences with an existent brand, with the possibility to create a preferred brand image in their minds (Brown & Dacin, 1997). A mass product was used to attract the interest and purchase intention of all types of target groups that could be involved in the experiment. The logo and other communication pieces were designed in order to make the brand as authentic as possible. Fictitious cause-related marketing components as part of the CSR strategy of the company were created for the experiment and were included in the two communication pieces created (Nan & Heo, 2007).

Considering the nature of the communication channels included in the experiment, and in order to assure the

ecological validity which states that the conditions of the study must approximate the real-life situation which is under investigation (Brewer, 2000), the experiment was held online. Participants were from Colombia (Latin America) and the Netherlands (Europe).

Facebook was selected as the social media to be used considering its fast growing pace, and the tools it provides to the company to humanize the brand and create communities with consumers. For this research, we designed a Facebook profile fan page called Splash Citrus (<http://www.facebook.com/pages/Splash-Citrus-healthy-refreshment/152596098140228>).

To increase ecological validity, the extent and way of presenting the information on Facebook was based upon the main findings of a preliminary content analysis, in which Facebook profiles of 15 large companies in both Colombia and the Netherlands listed on the stock exchange, were investigated on what and how the companies post information, respond to consumers, and communicate about marketing campaigns and CSR programs in their Facebook profiles.

For hypotheses testing, a video was included as traditional communication channel. The video, in the format of a commercial uploaded on You Tube (<http://www.youtube.com/watch?v=raUK3JMzXkg>), was made including the exact same information, texts and pictures presented directly in the Splash Citrus fan page.

2.2 Participants and Procedure

Participants were randomly assigned to one of the two Stimulus groups in this experiment, Facebook and Video commercial. After each participant was exposed to the Stimulus they had to fill out a questionnaire which took 8 to 10 minutes. The questionnaire was slightly modified to fit the different stimuli for the participants receiving the Facebook fan page or the Video commercial. We used 5-point scales for all items in the questionnaire. After recoding negatively formulated items, Cronbach's alpha and mean composite scales were calculated. For all scales, high scores indicate that participants possessed the characteristic to a greater extent.

Considering the participants had to play a consumers role, people from all ages and professions in Colombia and the Netherlands were invited to participate via e-mail or social media through snowball sampling. The sample contained 86 participants almost balanced over country (Colombia $n = 42$; the Netherlands $n = 44$) and Stimulus group (Facebook $n = 42$; Video commercial $n = 44$). There were 47 (54.7%) female participants, mean age was 29.1 ($SD = 8.5$). Of the participants receiving a Facebook profile, 36 (86%) had a Facebook account.

2.3 Measures

2.3.1 Independent Variable

Stimulus, the communication channel used to provide CSR information consisting of two groups:

- a) *Facebook*: This profile includes all features Facebook can offer to a firm's profile; including pictures, consumers' comments, and the possibility for the participants to interact with the page (see 2.1).
- b) *Video commercial*: This contained exact the same information as the Facebook profile. It was created and uploaded on You Tube (see 2.1).

2.3.2 Dependent Variables

We used the scale for *Purchase intention* developed by Baker and Churchill (1977); consisting of 4 items with answers ranging from 'definitely yes' to 'definitely not'. This scale is the source of the physical attractiveness of models in advertisements. It has been used in several marketing with reliability alphas over .70 (Bruner II et al., 2005). Slight modifications in the vocabulary were made to fit the product in consideration. An example items was: 'Would you like to try Splash Citrus?' Cronbach's alpha in this study was .81.

Brand image was measured as the participant's attitude toward the brand, with the scale first used by Peracchio and Meyeres-Levy (1994). The 8-item scale is composed of semantic differential items (e.g., unappealing-appealing, poor value-excellent value). Studies involving topics such as the consumer attitudes have reported reliability values over .70 (Bruner II et al., 2005). An example item was: 'Based on the information provided in the "Splash Citrus" Facebook fan page/video, do you perceive Splash Citrus as: Mediocre - Exceptional'; Cronbach's alpha in the current study was .91.

2.3.3 Interaction Variable

Product involvement was measured with the scale developed by Cho, Lee, and Tharp (2001) assessing the consumer's general involvement with a particular product category. It is a 3-item scale with answering options ranging from 'strongly disagree' to 'strongly agree'. This scale has been used in studies related with exposure levels to advertisement banners and personal correspondence, with reliability alphas over .81 (Bruner II et al.,

2005). The vocabulary was adjusted to fit the product in consideration, and the purchase intention question was omitted. An example item was: 'I am interested in (non-alcoholic) beverages in general'; Cronbach's alpha was .83.

2.3.4 Control Variables, Manipulation Checks and Common Method Variance

We controlled for age, country, cultural values, and English language proficiency of the participants. As participants were from Colombia and the Netherlands two cultural values were measured on which people from both countries differ most according to Hofstede (2001) and that may have an effect on consumer behavior when dealing with social networks (Pookulangara & Koesler, 2011). Scales were used for *Individualism-Collectivism* (6 items) and *Femininity-Masculinity* (4 items) with answers ranging from 'strongly disagree' to 'strongly agree'. Example items of the two scales: 'Group welfare is more important than individual rewards', and 'It is more important for men to have a professional career than it is for women'. Cronbach's alpha's were .72 and .71, respectively.

As the Stimulus and the questionnaire were in English we controlled for the level of *English language proficiency*. Mean *number foreign languages spoken* by participants was 2.41 ($SD = 1.12$); with participants from Colombia ($M = 1.95$, $SD = 1.08$) speaking fewer foreign languages than in the Netherlands ($M = 2.84$, $SD = 0.99$; $t(84) = 3.98$, $p < .001$). Self-assessment of English language contained 4 items on the skills: reading, listening, writing, and oral; example item: 'How would you rate your reading skills in English?'; Cronbach's alpha was .83.

As manipulation checks two CSR-related questions were included to record the perception of participants of *SPLASH Citrus as doing good to society* (answering options ranging from "definitely no" to "definitely yes") and as a *responsible product* (semantic differential with "not responsible" and "responsible" as extremes).

To test whether common method variance was a problem we conducted a Harman one-factor test (Podsakoff, MacKenzie, & Podsakoff, 2003) on all 30 scaled items. An unrotated Exploratory Factor analysis resulted in seven factors with Eigenvalues > 1 (total explained variance 66.1%, first factor 22.8%) showing that the first factor did not account for the majority of the variance. Hence, we preliminarily concluded that common method bias had no detrimental effect on the outcomes of this study.

2.4 Statistical Analyses

IBM SPSS Statistics (Version 22) was used to perform the statistical analyses. A missing value analysis showed that the variables had acceptable values of missing values (under 10%). Most metric variables appeared normally distributed (values of skewness and kurtosis were in the range of ± 2 times the standard errors (Hair, Black, Babin, & Anderson, 2010); except for Brand image (left skewed) and Age (right skewed and peaked). Descriptive analyses were done for all variables. With independent sample t-tests we checked for differences between the two stimulus groups. (M)AN(C)OVAs were used to test the hypotheses and effects of control variables. The independent variable Stimulus was treated as a fixed factor and Purchase intention and Brand image as dependent variables. To assess the effect of Product involvement we performed simple effect analyses. For all inferential tests an alpha level of .05 was used.

3. Results

3.1 Descriptive Statistics and Manipulation Check

Table 1 shows the descriptive statistics for the all the variables, in total and broken down by Stimulus

Regarding the control variables, independent samples t-tests revealed that in the Facebook group participants were, on average, younger than in the Video group ($t(80.2) = 2.36$, $p < .05$) (Note 1). There were no other differences indicating that control variables and manipulation checks differentially worked out in the two groups.

3.2 Effect of Facebook versus Video Commercial on Brand Image and Purchase Intention

Testing Hypothesis 1 on the effect of Stimulus, Facebook versus Video commercial, showed a significant multivariate effect (Wilks' $\Lambda = .86$, $F(2, 83) = 6.94$, $p < .01$). Univariate analyses showed that Brand image ($F(1, 84) = 5.84$, $p < .05$) was significant, but not Purchase intention ($F(1, 84) = 1.87$, $p = .18$). MANCOVAs with control variables age, Individualism-collectivism, Femininity-masculinity, Number of languages spoken, and English language skills showed no effects of the covariate (Note 2). An exception was Country that showed a multivariate main effect (Wilks' $\Lambda = .89$, $F(2, 81) = 4.86$, $p < .05$) as well as a univariate main effect for Purchase intention ($F(1, 82) = 9.66$, $p < .01$) which evidenced that participants from the Netherlands ($M = 3.49$, $SD = 0.74$) scored higher than those from Colombia ($M = 2.93$, $SD = 0.90$). However, there was no univariate effect for Brand image and the effects of Stimulus were similar to the outcomes without Country as covariate.

Given the multivariate effect and univariate effect for Brand image that reappeared in the MANOVA and in almost all MANCOVAs, we conclude there was partial support for Hypotheses 1.

Table 1. Descriptive statistics, means and standard deviations between brackets, for all variables broken down by the two Stimulus groups

Variable	Stimulus group		
	Facebook (<i>n</i> = 42)	Video Commercial (<i>n</i> = 44)	Total (<i>N</i> = 86)
<i>Dependent</i>			
Purchase intention	3.35 (0.88)	3.10 (0.85)	3.22 (0.87)
Brand image	3.15 (0.74)	2.74 (0.88)	2.94 (0.83)
<i>Interaction</i>			
Product involvement	3.34 (0.72)	3.23 (0.75)	3.28 (0.73)
<i>Control</i>			
Age	27.0 (7.12)	31.2 (9.32)	29.1 (8.54)
Individualism-collectivism	3.13 (0.58)	3.20 (0.62)	3.16 (0.60)
Femininity-masculinity	2.51 (0.85)	2.44 (0.67)	2.47 (0.76)
Number of foreign languages spoken	2.45 (1.13)	2.36 (1.12)	2.41 (1.12)
English language skills	3.99 (0.53)	3.83 (0.58)	3.91 (0.56)
<i>Manipulation check</i>			
Splash is doing good to society	2.93 (1.02)	2.50 (1.17)	2.71 (1.12)
Responsible product	3.64 (0.88)	3.64 (0.84)	3.64 (0.85)

3.3 Interaction Effect of Product Involvement

Product involvement was statistically significant when included in the model for testing Hypotheses 1 as a covariate (Wilks' $\Lambda = .91$, $F(2, 82) = 3.90$, $p < .05$). To further investigate the effect of Product involvement a median split ($Mdn = 3.33$) was used to categorize groups of relatively low ($n = 51$) and high ($n = 35$) Product involvement participants. Its effect was analyzed together with Stimulus in a MANOVA focusing on simple effects. The multivariate tests were significant in the low (Wilks' $\Lambda = .91$, $F(2, 81) = 4.00$, $p < .05$) and the high Product involvement group (Wilks' $\Lambda = .88$, $F(2, 81) = 5.40$, $p < .01$). Subsequent univariate analyses revealed the following (see also Figure 1).

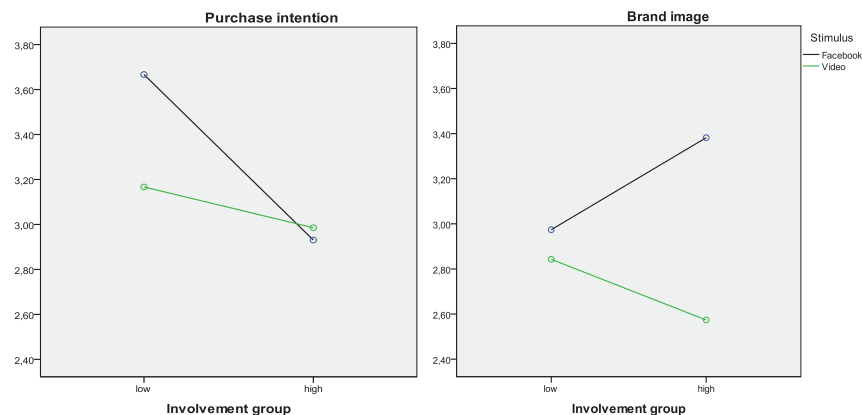


Figure 1. Plots (estimated marginal means) illustrating the interaction effect of product involvement in the effect of Stimulus group (Facebook vs. Video commercial) on consumer's Purchase intention and Brand image

For the low Product involvement group, the mean of *Purchase intention* was significant higher in the Facebook than in the Video group ($M_{Facebook} = 3.67$, $SD_{Facebook} = 0.81$; $M_{Video} = 3.17$, $SD_{Video} = 0.79$; $F(1, 82) = 4.60$, $p < .05$). For the high Product involvement group there was no effect ($M_{Facebook} = 2.93$, $SD_{Facebook} = 0.81$; $M_{Video} = 2.99$, $SD_{Video} = 0.94$; $F < 1$).

No effect was found for *Brand image* in the low Product involvement group ($M_{Facebook} = 2.97$, $SD_{Facebook} = 0.82$; $M_{Video} = 2.84$, $SD_{Video} = 0.71$; $F < 1$). However, an effect was found in the high Product involvement group ($M_{Facebook} = 3.38$, $SD_{Facebook} = 0.55$; $M_{Video} = 2.57$, $SD_{Video} = 1.09$; $F(1, 82) = 8.85$, $p < .01$). Subsequent (M)ANCOVAs with control variables age, Individualism-collectivism, Femininity-masculinity, and English language skills showed no effects. However, as was also evidenced in testing Hypothesis 1, Country appeared to have a similar effect on Purchase intention. In addition, Number of languages spoken had a positive effect on Purchase intention. Summarizing, the univariate effect for Purchase intention was not in accordance, but the multivariate effect as well the univariate effect for Brand image were in line, in total there appeared partial evidence for Hypothesis 2.

4. Discussion and Conclusion

In this study we addressed the link between CSR and OSNs and their effects on consumer behavior. In an online experiment we analyzed the effect of a firm's Facebook profile for transmitting CSR information, in comparison to a video commercial, on participants' brand image and purchase intention. We also tested the role of product involvement in this. In addition, we assessed whether a set of control variables, age, country, cultural values, and English language proficiency confounded these effects.

In general, there seemed a positive reaction to the information provided in terms of purchase intention and the way the participants perceived the company as a responsible product. Hence, these results to some extent evidence that the development of CSR programs and the diffusion of related information produce a positive effect in the consumer's perception on CSR information of basic-type products brands like bottled water. As such these findings are consistent with results from previous research (Bigne et al., 2006; Graafland & Eijffinger, 2004; McWilliams & Siegel, 2001; Nan & Heo, 2007).

We found partial support for Hypothesis 1 and thus may conclude that using Facebook as a communication channel of CSR information to some extent yields higher effects than transmittance by means of a Video commercial. It seems especially effective for producing a higher brand image in consumers. Facebook, as an interactive platform facilitating the relationship bonding and the firms "humanizing" (Levy, 2010), indeed seems to be more functional in this respect than a traditional video commercial. The absence of a clear effect on Purchase intention encourages to do further research and study if the two dependent variables in this study may be more complexly related for example as indirect or moderator effects (Wang and Yang, 2010). The analyses of possible confounding variables show that the effects described are quite robust. However, there is an indication of an effect of the two countries involved in this study Colombia and the Netherlands. Participants from the latter country incline to have a higher Purchase intention. Remarkable is that the cultural values studied, Individualism-Collectivism and Masculinity-Femininity (Hofstede, 2001) did not have an influence in the relation between the communication channel of CSR information and the consumer reactions toward the product or brand. This is partly in line with Egri et al. (2004) stating that Individualism-Collectivism does not have an effect on Corporate Social and Environmental Responsibility related issues. However, more research is needed on possible effects of cultural values on processing individual elements of the communication messages to inquire to what extent they are congruent with consumers' cultural values. In addition, we call for replication research in other countries to assess whether our findings can be confirmed and thus whether they can be generalized to other populations. The design of this experimental research, an online experiment with easy access to stimuli and questionnaire, facilitates this.

The second hypothesis inquired the effect of product involvement. The partial support for it, gives reason to consider product involvement as an important concept to include in research of focusing on CSR and OSNs effecting consumer behavior. In order for a Facebook strategy to be successful, the consumers must have enough involvement with the brand, product or purchase process to become a fan of the Facebook fan page, and agree to receive messages from the firm. This argument is consistent with the findings of Godin (1999) and Solomon (2007) regarding permission marketing. When a consumer decides to give permission to a firm to provide him information, in this case through becoming a follower of a fan page, an interactive dialogue allows the construction of a close relationship that affects the consumer reactions.

Taking into account the specific evidence regarding product involvement we found that it revealed a more fine-grained pattern in comparison to just focusing on the effect of Facebook versus the Video commercial. In line with Hypothesis 2 is the finding that in the high product involved group the effect of Facebook versus the Video commercial is higher for brand image. Involved consumers seem to be more triggered while using Facebook than while being looking at traditional media. Considering the lower costs involved for companies this seems very promising for Facebook not only as a marketing tool but also as a management instrument. However, the results for purchase intention as well as possible confounding effects for country and the number of languages show that the role of involvement is not clear-cut and needs further research in other samples of consumers to substantiate its effects. Using other types of commodities for transferring CSR information in such research would provide insight to what extent the effects of Facebook versus video commercials are general or product dependent.

Considering this research linked three up to date concepts, CRS, OSNs, and consumer behavior, the opportunities for further research are vast. However, some limitations should be acknowledged. The stimuli necessarily abstract from real life. In the case of the TV commercial, in real life the zapping and lack of attention during advertisement could also be a problem influencing over brand image and purchase intention; as well as

the quality of the video that may not be exact as the quality of the advertisements by the largest firms. For this matter, further research could include additional communication channels such as webpages and press releases, to acknowledge these limitations and to have a more comprehensive outcome of the influence of communication channel of CSR information over consumer behavior. Besides, we manipulated the Facebook and Video commercial as two separate channels, but in reality more and more these webpages are allowing interaction and feedback from consumers. So this may have had an effect rather than, for example, comparing a Facebook fan page with a commercial broadcasted on TV.

Another issue is the impact of English proficiency. We showed that there was a non-significant effect on the English language skills but that participants from Colombia spoke fewer foreign languages than those from the Netherlands. Moreover, as the spread of English as well as the attitude towards it seems less favorable in Colombia than in the Netherlands (Vélez-Rendón, 2003, Gerritsen & Nickerson, 2004) this may have biased the sample. Therefore, future studies should develop strategies to encourage more people to participate, with adaptation of the questionnaires and the communication pieces to the local language.

Marketing managers can assess the use of Facebook as a base for diffusion of CSR-related information that could generate positive effects in consumer reactions through an interactive dialogue and therefore in financial performance, generating in this way a cyclical behavior that will allow a further investments in CSR programs, and a sustainable positive performance for the company and society. However, consumer's involvement has to be a concept that the marketer cannot leave aside, as it will increase the effect of Facebook as communication channel on brand image. Moreover, marketing managers should think of strategies for making consumers *becoming* and *remaining* as Facebook fans of their company.

Facebook is a powerful tool for marketing managers that also cannot be ignored in research. In this study we contributed to possible effects of Facebook in communicating CSR related information. While developing programs aimed to contribute to the social and environmental wealth of the world, it is important that firms maintain or improve their economic sustainability as these are not mutually exclusive but complementary (see Doh & Guay, 2006; Elkington, 1997). Therefore, firms have the need to look for new and update strategies which will allow them to keep executing their responsible role, while maintaining a positive economic performance. This study shows that Facebook may be helpful achieving this and that product involvement is essential here (see Godin, 1999; Solomon, 2007). CSR and Facebook thus seem a splashy combination allowing marketers to implement innovative strategies to achieve the firm's financial, social, and environmental sustainability.

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Notes

1. Because Levene's test was significant, t-test results for unequal variances are reported.
2. We performed a MANCOVA with all covariates entered simultaneously as well as a series of MANCOVAs considering the separate effect of each covariate (multivariate and univariate). The categorical covariate country was treated as a fixed factor. In line with Pookulangara and Koesler (2011) it was also tested whether the effect of Stimulus on Purchase intention and Brand image was moderated by the cultural values Individualism-collectivism and Femininity-masculinity, but there appeared no evidence for this. Because of space restrictions statistical outcomes are withheld but can be obtained from the authors.

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Tax Evasion and Tax Awareness Evidence from Jordan

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Abstract

The aim of this study is to examine the determinant factors (contextual tax awareness, and ethical tax awareness) and their effect on tax evasion.

The determinant factors have been identified based on tax evasion literature and action research. In order to collect the data of study the researchers designed a survey. Data is collected from (492) taxpayers and (471) employees of income and sales tax department as respondents for the research questionnaire.

Findings of this study indicate that there is a positive effect of contextual & ethical tax awareness on tax evasion from the point of view of taxpayers & employees of the income and sales tax department.

Keywords: tax awareness, tax evasion, taxpayers, sales tax department

1. Introduction

1.1 Preface

Increasing the number of the sources in control of the government's revenues is a necessity. The nation is developing because of the increase and improvement in dynamics of what community needs, and in order to achieve that, it requires well-functioning budget. Regarding this issue, the government must optimize its revenues at once. There are plenty of sections providing sources for the government's revenue, they're called sectors, and they are distributed both inside and outside the country.

As for the revenues from inside the country, they are collected from taxes, while other sources from outside the country are collected from the loans of foreign countries. The government sees that they must not depend much on external revenues, so they are trying to increase the internal one. At this time, the largest amount of money comes from taxes. And the revenues from the taxes are increasingly rising, year after another. In the end evasion of taxes in the kingdom has led to losing the revenues to Jordan's treasury that is, in case of collecting, may cause a decrease in the fiscal deficit of the country. Huge fiscal deficit added to lack of resources in the kingdom is the cause behind the challenges that the economy is facing; that is the reason why it is almost an impossible mission to fund projects which are necessary to meet needs of the process of improving economy and social life (Nsour, 2014).

Richardson (2008) states that the system of self-evaluation, which has been used in Indonesia since 1983 for taxation, leads to complete trust by people who pay taxes regarding calculating, depositing, and reporting the commitments of their taxes in case they applied this system, greatly burdens taxpayers. In order for them to pay their taxes, taxpayers must be responsible and aware of the consequences. Which means, the kingdom must spread awareness among its people regarding this matter? Devano (2006) thinks that, applying self-evaluation system and bringing awareness regarding results leads people into paying their taxes by choice (voluntarily).

Along with the reformations going on in the taxation process, people are expected to be more willing to share data regarding their taxes. Taxes from individuals have a major role in the development in the government, combined to the awareness of people to how important it is to pay taxes, besides the ambitions of the constitution and the nation, regarding democracy.

There will also be a number of taxpayers who will continue spreading awareness regarding this issue. They are

needed to put their trust in the form of how the organization collects taxes and manages the taxation which is, in our case, the government of Jordan. The methodology of collecting taxes is easy and clear, as a result of revenue by taxes which are distributed regionally, which leads to making taxpayers pay all their taxes in full compliance because they feel like they are participating in the development of their country. People who pay taxes aspire and tend to pay the smallest amounts, and may sometimes attempt to completely avoid paying their taxes. Behaviors of this kind are common in this field of subject.

Thus a study has been conducted by the researcher, regarding the effect of the evasion of taxes and raising awareness in that matter, called The Effects raising the awareness around taxes and tax evasion.

1.2 Importance of the Study

The phenomenon of tax evasion is global, experienced by developed and developing countries alike. Because tax evasion limits the ability of governments to provide revenue needed to finance economic development and at the same time puts additional burdens on taxpayers, countries seek to quell this phenomenon, the importance of the study came through studying tax awareness effects on tax evasion in order to reduce the evasion of taxes and increase The concept of tax awareness for individuals in the Jordanian society.

1.3 Problem and Questions of the Study

There is a research conducted by Martinez and Rider (2005) regarding how tax fraud operations has developed in the USA, as a result of this research, less people will evade paying their taxes in case officers in the major of law enforcement worked on increasing taxes. The influence of the improved implementation is that people who pay taxes will comply. But still, the researcher Hinrichs (1966) found in Hammar et al.,(2006) taxpayer's reports doesn't include its net worth, coming from the results of the study which Sandmo conducted. Evasion of taxes (2005) led to producing a theory-based test in the United States of America, assuming that people who pay taxes spend their income on their needs in the economic field ignoring paying their taxes this matter is connected to the sum of awareness and ethics of people who pay taxes. Matters regarding taxes are very important and should not be neglected in the future. On the other hand, Jordan depends mainly on taxes collected from their citizens to serve them and find money for financial projects which will guarantee them a good amount of cash in the future. The number one source of revenue in Jordan is raising taxes from people; it equals 62% of the whole sum of revenues collected by the government in Jordan (Zu'bi and Khatatba, 2014). Therefore, evasion of corporates and companies in Jordan has a major effect on its economy.

Which means affecting the government's capability of serving citizens and companies properly? And let's not forget that evasion leads to burdening the workers at the department of income tax (Alshare, 2014). Problem of the study can be summarized in the following questions:

1. Does contextual tax awareness affect tax evasion from the point of view of the employees of the income and sales tax department?
2. Does ethical tax awareness affect tax evasion from the point of view of the employees of the income and sales tax department?
3. Does contextual tax awareness affect tax evasion from the point of view the taxpayers of the income and sales tax department?
4. Does ethical tax awareness affect tax evasion from the point the taxpayers of the income and sales tax department?

2. Literature Review

The economy in Jordan faces the problems of lack of resources and financial deficits this affects the general budget, which makes the process of providing the funding required to meet the requirements of economic and social development a complicated process (Alshare, 2014). This summarizes the literary topics related to this study. It has been paying attention to see the studies that have been made in the local and international environment.

The first study on the subject is made by Chen (2003). The purpose of this study is integration of public capital with tax evasion into a standard AK growth model. In this model, the government is working to improve the tax rate, while individuals improve tax evasion. It knows the tax rate, tax evasion, and economic growth and then compares them with similar economies except those without tax evasion 10 countries. It makes surveys on the impact of three government policies on the tax rate, tax evasion and economic growth. The results of this study showed that the increase in the cost of tax evasion and the punitive fines reduces the tax evasion, while the increase in the tax audit reduces the tax evasion only if the cost of the tax application is not very high.

Theoretically, the three policies do not clearly effect on the economic growth, due to the indirect effects on tax evasion and better tax rate. Two years later, Sandmo (2005) made a study. The purpose of his study was to give an overview of the main topics in the tax evasion theory starting from Allingham and Sandmo (2005), It presents comparative statistics to the original model of individual behavior where the decision of tax evasion is similar to the choice of the portfolio, and its extensions is to integrate the conscious social behavior and participation in the black labor market and evasion by companies from paying taxes. It also discusses the analysis of situations of taxes and problems involving the transition individual to aggregate analysis. In the end, it presents the issues that appear in the formulation of taxation ideally in case of tax evasion. Then, the study of Desai and Dharmapala (2006) came. The objective was to study the links between companies that avoid paying taxes, the increase in incentives for managers significantly and corporate governance structure. The researchers developed and tested a simple model to focus on the importance of integration in between tax sheltering and managerial diversion in determining how the impact of incentives significantly on decisions of tax sheltering. This model reveals the testable hypothesis that the characteristics of the governance of the company determine how incentives indemnities can change the decisions of sheltering. In order to attempt the model, the researchers make an experimental measure of avoidance companies from paying taxes- the component of the book- the tax gap is not based on accounting accruals- and study the link between tax evasion and incentive compensation process. The result of this study is that, for the full sample of firms, the increase in incentive compensation leads to a reduction in the level of tax sheltering.

As expected from the model, the link between incentive compensation and tax is a function of governance of the company. After that, Bashar and Haitham, (2008) decided to make a study. The aim of this study is to examine the evasion of income tax in Jordan and prescribed in different cures for this problem. This paper is about the problem of evasion of income tax. This study reviewed the reports from academics and statistics from the Income Tax Department. This study started with talking about an overview about the Income Tax Law, with clarification of the difference between tax avoidance and tax evasion and provided an empirical data on the size of evasion of income tax in Jordan. In the article 42 of the Income Tax Law, the anti-tax evasion provision, is made. In the last analysis, this study suggested a number of methods that can be used to address the evasion of income tax. The result was that as far as the Jordanian government is concerned about the subject of evasion of income tax, many legal and illegal techniques experience can be used. If the reaction of Jordanians is of non-compliance, the study says the story of how to create a culture of compliance with the income tax.

Another study made by Slehat (2009). The main purpose of this study is to examine the tendency towards the Jordanian payers of tax evasion through the study of the impact of these variables on tax evasion: (Age, gender, marital status, educational level, the level of income, source of income, corruption, bribery and tax rate, fine rate, probability of detection, fairness of the tax system and the government, religion, and ethics). Data was collected through questionnaires distributed to 212 respondents in Jordan and have been processed using the Statistical Package for Social Sciences for the purpose of this study. The result of this study showed there is a significant positive relationship between corruption and bribery, and tax rate, and fine rate, the possibility of discovery, fairness of the tax system and the government, religion, and ethics with tax evasion, while the education and the level of significant negative income with tax evasion. There is significance correlation but the relationship was positive between the marital status and tax evasion, but other factors such as age and the age, sex, and source of income have an important relationship but negative relationship. In 2010, two researchers made a study, Slemrod and Yitzhaki. The most important thing in this study is the theoretical models that integrate avoid and evade the problem of the overall decision that individuals face. This study is related to behavior expected in the model to what is known empirically about the extent of evasion and avoidance, and how its response to tax enforcement policy. Standard analysis discusses the impact of avoidance and evasion on the vertical and horizontal equity analysis as well as the efficiency costs; taxonomy of efficiency costs is presented. The researchers believe that the concept of marginal cost-efficiency of the funds is a useful way to summarize the normative issues that arise, and to expand the concept to cover administrative costs, avoidance, and evasion.

In addition to these studies, Jamil and Al-Naimat, (2013) made their study. The researchers in this study focused on the provisions of the Jordanian tax laws for the years 2003, 2009. In theoretical and analytical view, this study discussed the Jordanian tax laws, and provided a framework for decision-makers. It presents the concept and the types and classification of taxes. In addition, it discussed the properties, methods, and means the tax system in Jordan. To support and enrich the study, researchers worked through the data extracted from the budget bill for the years 2006-2009 for the comparisons. The study found that tax revenue for 2009 has increased, especially in the beginning of this year due to the increase in profits and income taxes on income and profits at a rate (58.7%). Otherwise, the national tax agency is linked to various other sectors. The study urged the importance of holding

training courses to link the financial and accounting framework. In the end, connecting taxation legalization and their amendments with Tax computerized accounting system allows to increase in number of those covered with tax computerized accounting system that allows providing tax declaration and the spread of installation and maintenance provided by the tax departments. Studies did not stop here, Alm study in 2012 came. The purpose of this study was to evaluate what we have learned about tax evasion since Michael Allingham and Agnar Sandmo launched the modern analysis of tax evasion in 1972. I highlight on three questions and the answers to these questions that have emerged over the years. The first question is how do we measure the extent of evasion? The second question is how can we explain these patterns of behavior? The third one is how can we use these insights to control evasion? Here, I will show my own answers to these questions by focusing on different examples of research. As a result of this study, almost the main conclusion is that we have learned many things, but we also still have many problems in our understanding of how to measure, explain, and control tax evasion. I will also provide some suggestions and some predictions about promising avenues of future research may lie. In the same year, Tabandeh et al. made a study (2012).

The aim of this study is to know the factors causing tax evasion and the relative contribution. The study used an Artificial Neural Network methodology on Malaysian data from 1963-2010. The results of this study showed that the tax burden, the size of government and the inflation rate have a positive impact on tax evasion, but the relationship is negative between tax payers' income and trade openness with tax evasion. On the other hand this study Serkan et al., (2015) the goal was to heavily focus on how religions shape attitudes towards ethics of tax evasion. First, this study begins with a glance at Four Views about the ethics of tax evasion that have emerged over the years, and then moves to review some of the topics of theoretical and empirical literature related to this subject. Practical aspect in this study is talking about attitudes toward tax evasion in 57 countries from the perspective of six religions using data from Wave 6 (2010-2014) the World Values Survey. The sample population is more than 52,000. It was examined More than a dozen demographic variables. The result of this study was that cheating on taxes does not vary according to religion. Was the last study Alsheikh et al., (2016), aims to point out the main factors that causing to tax evasion. It was relay on a sample of point views of external auditors in Amman city of 173 auditors. The main concluded were that tax rate, penalty, and company size have a statistical sign affecting on the tax evasion in Jordan.

3. Theoretical Framework

Taxes in general are considered as important financial revenues of the country, and an essential resource to its treasury: where most of the countries depend on money collected from taxes to finance different expenses. Income tax however, is one of the most essential taxes in Jordan and this chapter comes to enable researcher to elaborate the tax, its definition, the development in its concept and the tax system in Jordan its objective, and its characteristics.

3.1 Definition of Tax and the Stages of Development of Its Concept

The tax system is defined as practical formulation and translation of tax strategies in countries in order to achieve objectives that the state is willing to achieve. Tax in general is considered as a branch of accounting that involves; preparation of financial statements, to estimate the taxable income of individuals and consequently define the amount of taxes that should be paid in accordance with income tax law. As it is strictly related to the law, where it is imposed and collected according to means defined by the law. (Haddad & Bani Rasheed, 2010). The concept of tax has evolved throughout the ages, where history cites that the Pharaohs collected taxes and spent money in accordance with special systems. Greece, however, took some of these systems. Aristotle and Plato writings included important subjects, concerning finance of the state and its organization principals. Romans inherited the Greek systems, and amended it to suit their special needs. (Kim, 2008).

Income tax was first known in 1799 in Britain and was imposed on land to cover military expenditures. Income tax was known in the United States in 1861, during the civil war, a legislation was introduced in 1913 that imposes and organizes income tax. By the end of the first quarter of the twentieth century, legislation, laws, and tax systems started in the Arab lands by colonialization authorities. The development of societies and establishments of modern states and the objectives of taxes imposed by the state have also developed, where it became an important factor orients the economy in the prospects of improving or organizing it and consequently achieving the expected economical target. Such as establishing justice, eradication of injustice, organizing economical life, insuring public services, achieving goals related to demands and improving economic life. (Miskam et al., 2013).

Regarding the modern concept of tax, it can be said that the states and after the economic crises -great depression- that occurred in 1929, the tax concept was based on its consideration as a major resource of finance

and effective means for the state to monitor financial and social activities. (Stephan, 2015).

Revising a collection of tax literatures and judiciary concerning the tax definition it is found that most authors focus on two approaches. The first indicates the traditional definition of tax as a financial obligation that individuals are committed to pay to the state in accordance with legislations to cover general expenses. Thus, tax is “deductions from the private sector to support the state”. The second trend defines the tax according to the modern concept as; deductions of money imposed by the general authorities on individuals according to their financial capabilities in the objective of covering general expenditures and to build state income. Tax is also a mandatory payment to the state, not regarded as a penalty, paid from the private sector to the public sector, imposed by a pre-defined amount, with no-expected return, to enable achieving different economic and social targets. The modern definition adds to the traditional definition that the effort deployed by the state to collect money from tax subjects is not the only objective but there are other economic, social, and political objectives. (Van, 2009).

The researcher believes that tax is a money lump sum imposed by the state on any individual whose income is taxable to cover general expenditures of the state.

3.2 Tax Evasion

Tax evasion phenomenon is considered one of the most important contemporizing financial crimes; its danger from tax point of view will be assessed through examining the financial, social, and economical objectives of these taxes. From financial aspect, tax is considered as an important source of revenue for the state. From an economical side it is an important tool to drive and orient the national economy by using it to encourage some economical activities through the use of tax incentives, also from social side; it contributes to eliminate the difference in social class by the redistribution of wealth.

Tax evasion leads to disturbing the equality and justice among taxpayers, honest taxpayers pay their taxes because of their belief in the tax obligation, whereas others evade. What worsens and endangers this matter that the state, and due to its need to public money, will impose new taxes or increase existing taxes, which increases the tax burden on honest taxpayers, which might drive them to evade.

4. Method

The aim of this study is to investigate the effect of Tax Awareness and Tax Evasion: Perceptions of Taxpayers and employees of income and sales tax department. To fulfill the goals of this study, a convenient research methodology has been adopted. This section debates the methodology and research design. It consists the methodology of the current study, population and sample, sources of data gathering, and data analysis methods used, and the hypotheses that have been created in light of the argument presented above, this study is an exploratory accounting research. It favors to adopt an analytical methodology. In relation to the research methods applied in this study, a quantitative research approach has been used where a research questionnaire has been particularly designed for the use of data collection from targeted population.

4.1 Research Method Design

The study questionnaire survey has two sections; the first section gathers demographic information of the respondents. The statistical characteristics of human populations (as age or income) used especially to identify markets. While the second section is used to measure the constructs in the research model by using a 5-point Likert scale, with choices alternating from strongly disagree to strongly agree, where the second section is used to measure tax awareness.

4.2 Population and Sample

This study is targeting the taxpayers and employee of Income and Sales Tax department as respondents for the research questionnaire. In 2016. This study has used a random sample method to choose the sample which consists of (1000) taxpayers and employees of this department of the study population.

4.3 Hypotheses

Ho1: There is no effect of contextual tax awareness on tax evasion from the point of view of the employees of the income and sales tax department

Ho2: There is no effect of ethical tax awareness on tax evasion from the point of view of the employees of the income and sales tax department.

Ho3: There is no effect of contextual tax awareness on tax evasion from the point of view of the taxpayers.

Ho4: There is no effect of ethical tax awareness on tax evasion from the point of view of the taxpayers.

5. Results

This section presents the research findings. Focus here is given to present results related to the descriptive as well as the statistical parts. Results related to factors investigated in this study are presented, this includes: Tax Awareness / contextual, and Tax Awareness / Ethical. After gathering the data for the research, the researchers analyzed these data that was collected to elicit the results of the Perceptions of taxpayers and employees of income and sales tax department. This section includes two main parts. The first of which is concerned with the descriptive tests for the study variables. In the second part it represents testing the research hypotheses using *One-sample T-Test*.

5.1 Research Method Reliability Testing

To obtain the necessary data for this research, a questionnaire has been designed to obtain answers of the targeted respondents (Perceptions of taxpayers and employees of income and sales tax department). The questionnaire consisted of two sections as shown in Table 1.

Table 1. Research Questionnaire Components

First Section: Demographical Information:	I am an income and sales tax, Gender, Age, Degree, Specialization, Experience, Professional certifications
Second Section: Variable's	
Tax Awareness / contextual (C)	Q1-8
Tax Awareness / Ethical (E)	Q1-8

One of the most essential elements that should be taken into consideration when preparing a questionnaire is testing it and making sure it has the reliability element, by which it means the stability of the scale and that it does not contradict itself. In other words, it has to give the same results if it is re-applied to the same sample. To conduct a reliability test for the questionnaire questions, the current research has used the internal consistency equation by using the Cronbach's Alpha coefficient; Table (2) exhibits results of the questionnaire's reliability testing tests.

Table 2. Questionnaire Reliability Testing

Item	Cronbach's Alpha Coefficient	Sum of Questions
Tax Awareness / contextual (C)	0.604	8
Tax Awareness / Ethical (E)	0.791	8
All Variables	0.697	16

As given in Table 2, it is noted that Cronbach's Alpha coefficient ratios indicate there is a high degree of reliability for all of the questionnaire questions, where alpha coefficient was statistically acceptable for the whole components of the questionnaire since all of the variables ratios were higher than (60%) (Qasem et al., 2016 and Aladham et al., 2016), in which the questionnaire had, as a whole, a reliability degree of 0.697. The researchers believe that the reason of this goes to the long experience of the research sample participants as shown in Table 4.3 in the descriptive statist part of the study.

5.2 Result of the Descriptive Statistics and Its Variables

In total, 1000 questionnaires were distributed on the research sample; (984) of which were answered ($\approx 98\%$), (21) were excluded due to the lack of seriousness from respondents when filling out the sections of questionnaire. Thus, the final sample of the research is represented by (963) questionnaires representing (96.3%) of the distributed questionnaires. Table 3 Illustrates the demographic distribution of the research sample.

Table 3. Study Sample Participants Characteristics

Item	Frequency	Percent
I am an income and sales tax:		
Employee	471	48.9%
Taxpayer	492	51.1%
Gender		
Female	741	76.9%
Male	222	23.1%
Age		
Less than 25 years	147	15.2%
from 25-35	582	60.4%
from 36-45	183	19%
46 years & above	51	5.4%
Degree		
Diploma	8	0.8%
Bachelor	707	73.4%
Masters	243	25.2%
Doctorate	5	0.6%
Specialization		
Accounting	801	0.6%
Marketing	3	5.7%
Business administration	47	4.8%
Economy	103	10.6%
Others	9	0.9%
Experience of Employee (471 Perceptions)		
Less than 2 years	131	27.8%
2-5 years	207	43.9%
5-10 years	118	25.1%
More than 10 years	10	3.2%
Professional Certifications		
JCPA	35	3.6%
CMA	17	1.7%
CPA	8	0.8%
Other	147	15.4%
No professional qualification hold	756	78.5%
Total	963	100%

As noted from Table 3 a large proportion of the sample has a good experience and educational level, for the percentage of those who have five years' experience and above was 28% of the respondents. To get the answers' rates for the research questions, the researchers used the descriptive statistics methods through finding averages, standard deviations for the answers of the study questions, and the final result for each axis. It should be taken into consideration that Likert Scale, used in the study, has to be graded correctly. When taking into account that the variable that expresses choices is an ordinal scale, then the potential answers will reflect weights: (strongly Agree = 5, Agree = 4, Neutral=3 Disagree= 2, and strongly disagree=1). Accordingly, arithmetic average (weighted average) is calculated by calculating firstly the length of the first period (by dividing 4/5), where "4" represents the number of distances, and "5" the number of choices. Therefore, the result will be 0.80 and thus, the distribution will be as follows:

Scale	Weighted average
Strongly Disagree	1.00 – 1.79
Disagree	1.80 – 2.59
Neutral	2.60- 3.39
Agree	3.40 – 4.19
Strongly Agree	4.20 – 5.00

Based on the above mentioned, the descriptive results can be viewed in the following section.

Table 4. Descriptive Analysis of Tax Awareness / Contextual

Tax Awareness / contextual (C)							
Perceptions of employees of income and sales tax department				Perceptions of taxpayers			
Tax Rate	Mean	S-Deviation	Result	Tax Rate	Mean	S-Deviation	Result
Q1	4.21	0.438	Strongly Agree	Q1	3.97	0.631	Agree
Q2	4.07	0.451	Agree	Q2	3.87	0.639	Agree
Q3	4.15	0.517	Agree	Q3	4.04	0.437	Agree
Q4	3.97	0.601	Agree	Q4	3.99	0.630	Agree
Q5	3.87	0.646	Agree	Q5	4.01	0.441	Agree
Q6	4.14	0.501	Agree	Q6	4.08	0.432	Agree
Q7	4.25	0.431	Strongly Agree	Q7	4.06	0.435	Agree
Q8	4.36	0.389	Strongly Agree	Q8	3.77	0.641	Agree
Overall Result	4.12	0.586	Agree	Overall Result	3.97	0.632	Agree

Table 4 presents the descriptive results for the answers of the first axis questions which are related to the variable (Tax Awareness / contextual). It is clear from the table that the total average of the answers perceptions of employees of income and sales tax department is 4.12. According to Likert scale, the result of this axis will be (Agree). It is also clear from the table that the total average of the answers perceptions of taxpayers is 3.97. According to Likert scale, the result of this axis will be (Agree).

Table 5. Descriptive Analysis of Tax Awareness / Ethical (E)

Tax Awareness / Ethical (E)							
Perceptions of employees of income and sales tax department				Perceptions of taxpayers			
Tax Rate	Mean	S - Deviation	Result	Tax Rate	Mean	S - Deviation	Result
Q1	4.21	0.437	Strongly Agree	Q1	3.88	0.631	Agree
Q2	4.22	0.434	Strongly Agree	Q2	3.84	0.639	Agree
Q3	4.04	0.451	Agree	Q3	4.01	0.437	Agree
Q4	4.41	0.307	Strongly Agree	Q4	3.95	0.630	Agree
Q5	4.31	0.317	Strongly Agree	Q5	4.02	0.441	Agree
Q6	4.24	0.431	Strongly Agree	Q6	3.77	0.432	Agree
Q7	4.27	0.430	Strongly Agree	Q7	4.15	0.435	Agree
Q8	4.39	0.310	Strongly Agree	Q8	3.91	0.641	Agree
Overall Result	4.26	0.431	Strongly Agree	Overall Result	3.93	0.642	Agree

Table 5 presents the descriptive results for the answers of the first axis questions which are related to the variable (Tax Awareness / Ethical). It is clear from the table that the total average of the answers perceptions of employees of income and sales tax department is 4.26. According to Likert scale, the result of this axis will be (Strongly Agree). It is also clear from the table that the total average of the answers perceptions of taxpayers is 3.93. According to Likert scale, the result of this axis will be (Agree).

5.3 Research Hypotheses Testing

To prove or reject the research hypotheses, the researcher has used the One Sample T-test method by depending on P-value and $H_0: \mu \geq 3$ to accept or reject hypotheses; where P-value should be less than 0.05, and $\mu \geq 3$, to reject the null hypothesis and accept the alternative one.

H_{01} : There is no effect of contextual tax awareness on tax evasion from the point of view of the employees of the income and sales tax department

Table 6. One Sample T-test of the Effect of Contextual Tax Awareness on Tax Evasion

P- Value	T- Value	Degree of freedom	Mean	S-Deviation
0.011	0.317	470	4.12	0.586

Table 6 Views One Sample T-test results for the variable (contextual tax awareness) and its effect on the tax evasion point of view of the employees of the income and sales tax department. Results in the table show that mean value are (4.12), which indicates the existence of an Agree by the members of the study. Study findings have shown that (P-value < 5%) has reached (0.011) and $H_0: \mu \geq 3$, has reached (4.12). Based on the rule which states the rejection of the null hypothesis "Ho" If the value of P is less than (0.05), and $H_0: \mu \geq 3$, meaning that contextual tax awareness effect tax evasion; therefore, rejecting the first null hypothesis and accepting the alternative one which says " There is effect of contextual tax awareness on tax evasion from the point of view of the employees of the income and sales tax department".

Ho2: There is no effect of ethical tax awareness on tax evasion from the point of view of the employees of the income and sales tax department.

Table 7. One Sample T-test of the Effect of Ethical Tax Awareness on Tax Evasion

P- Value	T-Value	Degree of freedom	Mean	S-Deviation
0.000	0.318	470	4.26	0.431

Table 7 Views One Sample T-test results for the variable (ethical tax awareness) and its effect on the tax evasion point of view of the employees of the income and sales tax department. Results in the table show that mean value are (4.26), which indicates the existence of a Strongly Agree by the members of the study. Study findings have shown that (P-value < 5%) has reached (0.000) and $H_0: \mu \geq 3$, has reached (4.26). Based on the rule which states the rejection of the null hypothesis "Ho" If the value of P is less than (0.05), and $H_0: \mu \geq 3$, meaning that ethical tax awareness effect tax evasion; therefore, rejecting the Second null hypothesis and accepting the alternative one which says "There is effect of ethical tax awareness on tax evasion from the point of view of the employees of the income and sales tax department".

Ho3: There is no effect of contextual tax awareness on tax evasion from the point of view of the taxpayers.

Table 8. One Sample T-test of the Effect of Contextual Tax Awareness on Tax Evasion

P- Value	T- Value	Degree of freedom	Mean	S-Deviation
0.027	0.572	491	3.97	0.632

Table 8 Views One Sample T-test results for the variable (contextual tax awareness) and its effect on the tax evasion point of view of the reviewers of the income and sales tax department. Results in the table show that mean value are (3.97), which indicates the existence of a strongly Agree by the members of the study. Study findings have shown that (P-value < 5%) has reached (0.027) and $H_0: \mu \geq 3$, has reached (3.97). Based on the rule which states the rejection of the null hypothesis "Ho" If the value of P is less than (0.05), and $H_0: \mu \geq 3$, meaning that contextual tax awareness effect tax evasion; therefore, rejecting the third null hypothesis and accepting the alternative one which says " There is effect of contextual tax awareness on tax evasion from the point of view of the taxpayers ".

Ho4: There is no effect of ethical tax awareness on tax evasion from the point of view of the taxpayers.

Table 9. One Sample T-test of the Effect of Size on Tax Evasion

P- Value	T- Value	Degree of freedom	Mean	S-Deviation
0.029	0.521	491	3.93	0.642

Table 4.9 Views One Sample T-test results for the variable (ethical tax awareness) and its effect on the tax evasion from the point of view of the taxpayers of the income and sales tax department. Results in the table show that mean value are (3.93), which indicates the existence of a strongly Agree by the members of the study. Study findings have shown that (P-value < 5%) has reached (0.029) and $H_0: \mu \geq 3$, has reached (3.93). Based on the rule which states the rejection of the null hypothesis "Ho" If the value of P is less than (0.05), and $H_0: \mu \geq 3$, meaning that ethical tax awareness effect tax evasion; therefore, rejecting the fourth null hypothesis and accepting the alternative one which says "There is effect of ethical tax awareness on tax evasion from the point of view of the taxpayers".

6. Discussion

The study primarily reached the conclusion that the first and second null hypotheses related to the income and sales tax department (tax assessors), are rejected. Researchers believe that the real reason behind rejecting these hypotheses is the nature of their work in the department, which necessities that all taxpayers of the department are most likely subjects of tax evasion in order to reach the real value of the taxes levied on an individual. The

purpose of their job is to implement justice and equality among all citizens regardless of their social classification. As emphasis on this tendency, the income and sales tax department had amended the temporary law (28) for the year 2009 to the law (34) in 2014 effective as from 2015 due to its ability to enrich the government's treasury.

The outcomes of the study also proved that the third and fourth null hypotheses targeting the taxpayers of the department have a minor and weak effect. The possible explanation of this outcome is the general concept among taxpayers that tax payment is a form of imposed payment and reduction of their wealth without considering its effects on the country's economy. Since Jordan is a non-productive country, money collected from taxes levied is essential to its treasury.

As far as the ethics are concerned, the general trend acts as if the concept of tax is not applicable. Despite the fact that the tax concept became obvious, but they tend to evade tax either fully or partially for certain sectors in the purpose of enlarging their wealth and conserving it, since they look at tax as a mere aggression on their own wealth and belongings.

The searchers team deduced that the difference in the consequences of tax evasion between (tax assessors) and taxpayers could be the result to the total difference in perspective of both parties, where the tax employees work on increasing the income of the country in the aim of improving the country's economy. On the opposite side the taxpayers increase their income from their own perspective to enlarge their wealth and conserve it by evading taxes and this represent the reason of difference in perspective between the two parties. This study faced a number of limitations, as sum of the interviewed people specially those among the taxpayers of the department due to their suspicion that the outcome of this survey could be used for their taxation affairs. This study also faced the problem of not having sufficient time to generalize this survey in different areas inside and outside Amman. This weakened the generalization of this study on the totality of the society. As a result, this study recommends performing more detailed studies on all income and sales departments to generalize result in order to reach a virtual perspective on tax evasion for both parties. This study also recommends improving individuals awareness through using different means such as universities, mass media and visual or non- visual media, that shows the negative effects on tax evasion on different country's such as health, education, transportation and others.

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Extent of Staff Professional Ethical on Customers' Commitment in Hotel Industry: An Empirical Study - Three-star Hotels in Jordan

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Abstract

The aim of this study is to understand the practical situation of work ethics in hospitality industry organizations in Jordan by focusing on professional ethics in relation to employees and managers. It also focuses on how such professional ethics prevail in hospitality industry facilities and affect customers' commitment. The study used primary data by distributing a questionnaire to staff in three-star hotels. The results revealed a positive relationship between the dependent and independent variables from the staffs' point of view by using simple regression. It is also concluded that professional ethical principles can be applied in hospitality facilities, primarily in dealing with customers and maintaining ethical trust; and that the staff (employees and managers) understands and appreciates the importance of having professional ethics in their organizations, as they lead to customer satisfaction and increases the level of commitment.

Keywords: ethical values, professional ethics, hospitality industry

1. Introduction

In light of the rapid burst of evolution, the need for determining the basic principles and work ethical concepts emerged to keep up with this development and follow the path of success and profitability. For business, organizations management methods and achievement of continuous success all have an effect on individuals' ethical transformation. This situation has raised numerous questions regarding the extent to which those individuals comprehend such ethics, and whether its application process reflects positively on the organization, or it came for their personal favor in order to assist in achieving individual and targeted profits. This was also reflected on organization interest, which considers customer satisfaction, as they are the true scale of its success and continuity in the sector.

The cornerstone of hospitality industry organizations is based on professional ethics as a basic and long-term strategy to earn customers' trust and to preserve the standards of such professional hospitality organizations, namely, restaurants, entertainment centers, and travel agencies. This is due to the fact that the quality standard of production is achieved by the satisfaction of customers from different ranks and, hence, it sheds light on the importance of determining professional ethics as well as the extent to which the staff's acceptance to maintain and apply these factors. A study of hotels in Australia found that 39.19 % of the managerial staff left within one year indicating a lack of employee's commitment (Davidson et al., 2010). This lack of commitment in hotels may be attributed to low wages, unsocial working hours, low job satisfaction and limited career advancement opportunities (Aksu, 2004). The success of the transaction depends largely on the success of the interaction between the employee and the customer (Ford et al., 2012). While others added that management commitment in hotel settings is vital to individual and organizational outcomes since the success of hotels is largely dependent upon positive interactions between employees and customers (Davidson et al., 2010). Committed individuals, who work harder, are less likely to be absent from work and have fewer intentions to quit their employment, possess increased job satisfaction and have the ability to increase productivity (Patiar & Wang, 2016). But the question is how employee and management ethical values based on their commitment affect customers' commitment and loyalty toward the hotel industry.

Researchers maintain that the hotel industry has a turnover "culture" existing at both operational and managerial levels (Davidson et al., 2010). The interest of this study was for the purpose of understanding the use of a

specific work ethic in hospitality industry organizations staff, the acceptability of professional ethics and finding out the extent of their implementation on customers' commitment toward hotel industry.

2. Research Problem

Scientific references for this type of study for the hospitality industry in Jordan are limited. Small- and medium-sized enterprises (SMEs), defined as organizations with less than 250 employees (OECD, 2014), have less ability to retain employees than their larger competitors. Large organizations can usually offer better payment and more promising career prospects (Nadin & Cassell, 2007). This forms a challenge and research problem to seek if there are any professional ethics that are considered as principles, and how do these ethics affect the operating results of the hotels in Jordan and whether customers are satisfied while the organization reaches its targeted profits.

3. Importance of Study

The research tries to pinpoint the following points:

1. Identify entrepreneurial staff professional ethics in order to be applied in the hospitality sector facilities which affect product quality in Jordan in general.
2. To identify the difference between employee and management perspectives in order to reduce the gap between the two parties through correcting erroneous paths pursued by management and to enhance principles that help employees compete in order to improve production levels.
3. To find out solutions to research problems, through concluding ethical knowledge applied in the hospitality industry.

4. Objectives of Study

This study seeks to achieve the following:

1. Stand on employees' professional ethics and their effect on customers' commitment toward the hotel.
2. Identify the relationship between managers' professional ethics and its effect on the customers' commitment and loyalty toward the hotel.

5. Hypotheses of the Study

The hypotheses of this study have been divided to fit study model dimensions as follows:

Main hypothesis:

There is a statistically significant relationship between hotel staff awareness of ethical concepts and customers' commitment. The main hypothesis was divided into two sub-hypotheses, which are:

H1: There is a significant relationship between employee professional ethics and customers' commitment.

H2: There is a significant relationship between managers' professional ethics and customers' commitment.

6. Literature Review and Theoretical Framework

Opening opportunities for organizations to deal directly with staff through regular meetings to clarify the importance of implementing business ethics may ease every staff member's task. Some argue that psychological discomfort may be caused due to miscommunication between managers and employees and then cause dissatisfaction of both teams which may eventually affect the customers' commitment toward the institute. However, if each team acts help in raising morals among staff, then this in its turn raises loyalty rates, which may be reflected positively on the customers' commitment. The tension and development of committed, satisfied and motivated employees is vital, as this type of employee is likely to work harder and contribute more to business performance, compared to those who are not very involved in the organization, due to their greater individual effort (Karatepe, 2013). Moreover, it must meet consumer expectations that are constantly developing in regard to the quality of service (Skogland & Siguaw, 2004). The specific organizational context of development essentially relates to the hotel establishment's strategy, structure, technology, culture and to the characterization of its employees and managers' commitment, competencies and skills (Prud'homme & Raymond, 2016).

Ethics are defined as disciplines that deal with what is good or bad, duty and commitment (Carroll, 2006), or it is the set of principles, standards and values that enhance individual behavior in different selections (Ghalibi & Ameri, 2007). While profession ethics or business ethics are the behavior in the business area, they are the total sum of experiences, education, the director rearing or members of project board of directors. Ethics in every society is the product of long historical development and are necessary for society formation, maintaining, and stability (Alake, 2008). The sources of ethics in community are numerous since they come through religious

beliefs, community's history, experience, cultural national traditions, tribal, clan, family, peers, reference groups, opinion and typical roles, practical experience and learning leaders. It is possible to review these sources as shown in Figure 1 below (Carroll, 2006), which demonstrates all individuals whether managers or employees or officials, and their actions and judgments on their work or their decisions based on their ethical base.

Managers daily face many decisions in addition to employees or customers attitudes that need to be developed properly. Thus, hotels whose general managers are committed to environmental issues are better equipped to develop valuable environmental management capabilities (Hyun et al., 2015). Decisions were taken and including developed policies are in line with norms and proper ethics which lead to increase benefit and achieve organizational goals that can be expressed through dealing with the following questions (Ghalibi & Ameri, 2007): how an organization treats its employees? How employees treat an organization? And how organization and its staff deal with other parties (consumers, competitors, brokers, suppliers, unions and others)? So the relationship between leadership style and organizational culture suggest that top managers influence firms' business performance through altering or establishing certain shared values and norms (Asree et al., 2010). Managers have a perspective by which they interpret the ethical behavior they depend on in running their business and operational decisions for organization management. This is based on a set of approaches as:

1-Utilitarian approach: The behavior is considered ethical if its outcome is of big benefit, or the benefit could serve a large number of people.

2-Individual approach: ethical behavior is the one that leads to maximizing individual's interest in the long term, and based on that benefit others and help managers in achieving their basic goals.

3- Rights approach: The behavior is deemed ethical if it respects and maintains individuals basic rights and to all those affected by it, so the organization has to take into account the relationship between it and its customers.

4-Justice approach: the ethical behavior is the one based on the others treatment impartially and fairly depending on the rules of law.

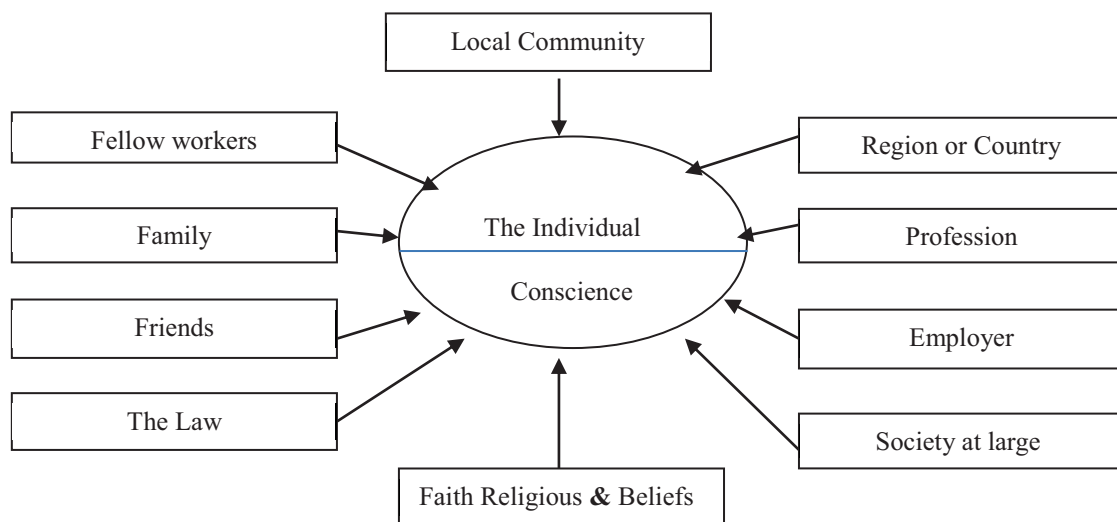


Figure 1. Elements influencing the prevailing norms of ethical behavior as a basis for ethical provisions on business and actions (Carroll, 2006)

It must be mentioned that laws obliged to individuals to comply with is "an important ethical standard", and can lead to the opposite of what they had been enacted. A study by (Najem, 2006) concluded that 20% of senior management changed their principles and their personal values according to organization expectations, 27% members of middle management, and 47% of members of the lower administration. This erosion is due to organizations characteristics upon which organizations are formed or depend on, such as hierarchical authority and rules that identify work and control, which motivate all employees towards unified goals and learn and master to comply with the imposed decisions and actions. These forms of organization and practices generate heavy pressures on managers, employees, customers' principles and personal values. In addition, group management may have a greater impact in reducing managers' engagement in decisions and programs that can be considered the concepts and immoral practices.

Hospitality industry organizations always seek to reach loyal customers because such customers have attitudes

that drive them to search for safe, valued and quality products, which are obtained from organizations that comply with professional ethics. That, in turn, helps them to provide their product and face competition with others and ensure their market share. World Tourism Organization has issued a set of legislation and legal instructions under the title (Global Code of Ethics for Tourism-translated into Arabic Language) for 1999, confirming their commitment to equality between men and women who are working in this sector and enhancing human rights, and also indicating tourism employees commitment by providing objective and truthful information to tourists. It also suggests that employees with low wages or self-employed in the tourism sector have the right, even the duty, to have adequate social protection, by reducing job insecurity as much as possible.

The major concern of the World Organization for hotels and restaurants is to promote trade profession reputation and level and ethical commitment - behavior of employers as they are a model for their employees (Hour, 2012). Locally there is a great similarity in the hospitality industry between the Arab States, as well as Jordanian Restaurants Association Regulation ensures proper treatment and behavior of various businesses within the hospitality industry and to ensure their commitment to behaviors and ethics in dealing with their customers since they represent the example to the rest of the employees. Some practices lead to positive organizational results by increasing and developing employees' knowledge and skills, and empowering them to make the most of them (Domínguez-Falcón et al., 2016). Governments, organizations and professional associations and unions who represent employers in multi hospitality industry sectors enact laws and develop behavioral rules, regulations and disciplinary regulations to bind those towards the customer (Hour, 2004).

The following are organizational stress types that can be associated in connection with management ethics. The role of staff involvement is highlighted with previous researches as an inseparable part of customer satisfaction and commitment projects (Kale, 2004).

1- Official Rule Pressures

Procedures and working methods are set to determine what is needed and what may be reduced to differentiate between individuals and environments due to the unification of what must be done based on the organization's perspective. So these rules become the alternative to individual values, which expose them to ethical pressures known as what is right, but fail to do because of the pressure rules.

2- Manager Pressure

If managers' pressure was to pass illegal attitudes and actions, it is deemed immoral by the boss since it represents an extortion or damage threat. The acceptance of this pressure is also considered immoral by the subordinate since it is deemed as a bribe to the boss. It is assumed that a manager should embrace competencies irrespective of differences that exist between job applicants and within the organization's needs as long as these individuals have the ability of outstanding and performance in jobs they occupy. Managers' practice of equal opportunity and non-extremism or discrimination principals are matters stated by law. But conviction must be generated among these managers and then translated to them in the workplace, as distinction here, is due to race or beliefs, nationality, religion, group or any other difference.

Group work has many values and benefits since it increases individuals' norms and ethical values promoted to their counterparts' level, and the emergence of group standards and ethical values as a result of the interaction, teamwork and team spirit (Najem, 2006). Also, industrial, commercial or service processes complexity make them out of any single person capabilities. The only effective way to deal with problems or to improve current business is to depend on a group or team that provides its members with decision-making participation, information consultation and coordination process improvement between various functional areas and to build confidence and create good relations among the staff and the customers (Isa and Al-Tai, 2008).

7. Research Method

7.1 Methodology

The research was carried out by primary data, collected by using a structured questionnaire. The questionnaire was divided into (4) groups. The first group was related to personal information of the study sample, while the second group consisted (6) statements that serve the first dimension in relation to professional ethics and customers' commitment. The third group consisted (8) statements regarding professional ethics related to employees treatment. Finally, the fourth group (6) statements directed toward professional ethics and managerial process officials. The data were analyzed by using data statistical analysis through using SPSS statistical 22 software.

7.2 Sample and Statistical Population

The statistical population in this study included staff members in three-star hotels (managers and employees). The questionnaire was distributed among 140 participants, and 124 were recollected, of 88.6%.

8. Measurement

The measurement of this research is depending on two type of variable which are dependent variable and independent variable. Customers' commitment is the dependent variable while employee and managers professional ethics are the independent variables. For the measurement of this variable, the research constructed a questionnaire, based on previous studies and the researchers' practical experience in hospitality industry.

8.1 Dependent Variable

• 8.1.1 Customers' Commitment

Customers may become narrow-minded and short - sighted if the relationship with the organization is restricted to what is obtained compared with the amount paid for it. Customers' commitment in light of this relationship may mean that customers placing additional and ethical demands are in the forefront (Najem, 2006). Commitment to business ethics is a reflection of trust, transparency and credibility requirements that confirm to avoid all forms of fraud, corruption and unethical practices (Kafi, 2014). As for organizations dealing with other parties such as suppliers, brokers and trade unions, it is outside the research framework, where the focus is on ethical – professional relationships between departments and employees and how they deal with these customers. Customer relationship management (CRM) in hotels has a strong effect on identifying and retaining the most profitable guests; and improving the commitment and loyalty of new guests (Wang, 2012).

8.2 Independent Variables

• 8.2.1 Employees Professional Ethics

The creating key of an organization's competitive advantage is directly based on respecting its members' diversity and allowing each of them to utilize his capabilities and skills to the maximum. This encourages employees to follow positive behavior and perseverance in creative work and commitment to main supreme interests of organizations (Ghalibi & Ameri, 2007). Despite that, individuals may possess such compliance and commitment to public standards (laws and principles and ethical standards), as the one group member finds due to the interconnection between group members and group common standards.

• 8.2.2 Managers Professional Ethics

Managers are individuals who have a significant impact on subordinates, due to position powers. Because of unequal status and power between the two, there is a need to settle that through one option, which is either the subordinate agrees with the manager or rejects and leaves. Some research indicated that employees working for transformational leaders are more innovative and direct their energy toward the benefit of the organization (Xenikou & Simosi, 2006). Demonstrating transformational leadership behavior can be successful (Mesu et al., 2015) and lead to higher customer commitment.

9. Data Analysis & Results Discussion

The reliability coefficient presented by alpha showed a degree of 86.7%, which is relatively high and accepted for scientific research, and gives a good indication on the formulation of the research tool, accuracy, and consistency of the objectives of the study, which enhances the reliability of the results.

9.1 Descriptive Statistic Results

9.1.1 Demographical Results

Table 1 indicated that majority of employee's who are working in three stars hotel are males where their percent is 85% of the total sample. 69% of the samples ages were ranged between 20-30 years, 28% were between 31-40 years. In regard to the education level, 38% of the study sample had a secondary school degree, and 34% of the sample had a diploma, while 26% were bachelor's degree holders and 2% were master's degree holders. It is worth mentioning that such type of hotels and due to services nature, do not need staff with higher education levels. As for years of experience the sample majority had less than 5 years' experience that is 47%, while 35 % had an experience period from 6 to 10 years, and 11 % had an 11 to 15 years' experience. In terms of monthly income, 55% of the samples income was less than 200 JD, while 26% have a monthly income for 201-400 JD, and 19% of the samples income ranged between 401-600 JD. None of the sample's subjects have more than the mentioned levels of monthly income.

Table 1. Sample distribution according to Demographic information

Variable	Frequency	Percentage%
Gender		
Male	106	%85
Female	18	%15
Age		
20-30 years	86	%69
31-40	34	%28
41-50	4	%3
Educational level		
High School	48	%38
Diploma	42	%34
Bachelor	32	%26
Master	2	%2
Years of experience		
Less than 5 years	58	% 47
6- to 10 years	44	% 35
11 to 15 years	14	%11
16 years and above	8	%7
Monthly Income		
Less than 200 JD	68	% 55
201-400	32	% 26
401-600	24	%19
Total	124	100%

Based on the analysis, it can be concluded that employees were youth and those whom their age ranged between 20-30 years, the majority were males, their salaries were less than 200 JD, and they have secondary school or diploma and most of them are at the beginning of the job ladder and have limited experience. Thus the results revealed that employees in the hotels are youth, mature and capable of providing service with high levels, and it could be understood from another aspect that three stars hotels are a link or stage in which employees are developed to move to four or five stars hotels.

9.1.2 Pearson Correlation

Pearson correlation is used to answer such a question as in table 2, and for scientific research a correlation of 0.643 and 0.531 for both types of independent variables, namely employee ethics and management ethics, respectively, Results showed a strong relationship between the client commitment and independent variables, as correlation appeared at a level of 0.056 significance, for employee ethics and 0.003 significance for the management ethics.

Table 2. Pearson Correlation

		AVGCom	AVGEMP	AvgMANG
AVGCom	Pearson correlation	1		
	Sig. (2-tailed)			
	N	124		
AVGEMP	Pearson correlation	.643**	1	
	Sig. (2-tailed)	.056		
	N	124	120	
AvgMANG	Pearson correlation	.531*	.562*	1
	Sig. (2-tailed)	.003	.001	
	N	124	124	124

* Significant at a level of 0.01.

**Significant at a level of 0.05.

9.1.3 Mean and Standard Deviation for Different Factors Expected to Affect Clients' Commitment in Relation to Employees and Management Professional Ethics

The descriptive statistics of all questions investigated in this study were illustrated in table 3 (mean and standard deviation). Using data from 20 observations, the analysis of the sample study also shows that the employee professional ethics were found to have a mean of 3.96, while 4.08 were for the management professional ethics. It was also proven that the customers' commitment had a mean of 4.1.

Table 3. Means and standard deviations of sample's responses

No	Question	Mean	S.D.
Customer commitment			
1	Dealing with customer attitude as imposed by profession ethical concept causes employees self-conflict	3.23	1.06
2	Many professional ethic principles approved an action plan that helped to gain customers commitment	4.18	0.74
3	Due to principle "achieving profit" customers are given improper information	4.29	1.18
4	Big distinction in customer's treatment, based on personal interest of managerial official not by order of importance.	4.61	1.11
5	Kindness to deal with customer is basic in gaining customer satisfaction and commitment	4.50	0.74
6	Managers follow the principle of "customer is always right even if not"	3.81	1.16
Total		4.103	
Employee professional ethics			
7	Rewards and bonuses are granted to hard working employees	3.73	0.79
8	Punishment methods are based on the size of default	3.71	0.82
9	Personal relationship exempts employee from many punishments	4.06	1.27
10	Service rewards granted to all staff are systematically fair	4.19	1.01
11	Employees are appointed to personal relationships	4	1.40
12	Rewards and money incentives are granted for men more than women	4.03	0.90
13	Discrimination of gender, not on efficiency and qualifications	4.11	1.06
14	Females are excluded from positions that affect work decisions	3.84	1.23
Total		3.958	
Management professional ethics			
15	The aim of the job is to obtain experience	4.34	1.20
16	Organization is considered a lifetime job	4.40	1.05
17	Managers create a work atmosphere that gives employees a sense of cooperation, intimacy and equality	3.86	1.11
18	Managers work to build one teamwork principle within employee's behavioral morals.	3.73	1.10
19	Managers are obliged to follow professional ethics that cause comfort to customers	4.27	1.06
20	Implementation of professional ethics causes a conflict between employees, managers and customers	4.11	1.12
Total		4.1183	

9.2 Hypotheses Testing

The model hypotheses testing results show that the variables of mission; employee and management professional ethics (the independent variables) jointly explain 53% of the variance (R²) of customers' commitment. As F-value = 60.346 with $p < 0.05$, it can be said that the model has a good fit for the data. As shown, there is a significant relationship between the dependent and independent variables; hence, H1 and H2 were accepted. The results show that staff professional ethics (both employees and managers) is positively correlated with customers' commitment, and could be depended on, all as indicated in table 4.

Table 4. Hypotheses Test

Dependent variable(Customers Commitment)				
Independent variables	Beta	t-value	Sig	Adaptability
Employee professional ethics	0.174	1.090	0.036**	Supported
Management professional ethics	0.178	2.405	0.007*	Supported
Multiple R = 0.73				R ² = 0.53
Adjusted Standard				
F = 60.346				p < 0.001
R ² = 0.52				Error = 0.3125

Note. * Significant at a level of 0.01.

**Significant at a level of 0.05.

10. Summary and Conclusion

Based on the descriptive results, most of the three-star hotel employees are males, their age ranged between 20-30 years; their monthly rate is less than 200 JD. Most of the staff were high school or diploma educated, most of them have less than 5 years' experience this is due to the fact that most of the employees leave the work in this type of hotels and move to higher level hotels where wages are more suitable with their experience. While the main purpose of the study was to explore the relationship between employee and managers professional ethics on the customers' commitment, in terms of the three-star hospitality sector in Jordan, results showed a positive effect of the professional ethics on the customers' commitment to a positive significant relationship. For the higher the ethics are, the level of commitment is expected to be higher. Since managers have their perspectives, they should create competitive advantage in their organization, by respecting its members', diversity and allow each of them to utilize their capabilities and skills to the maximum limits. Sign long-term contracts with

employees', diversification and increasing objectivity and real rewards to comply and to convince employees to stay in the same organization, this may push employees in return to follow positive behavior and perseverance in creative work and commitment to supreme interests of the main organization, where they are to maximize the excellence of performance, innovation and social responsibility, integrity, trust and protect work secrets and adopt teamwork style.

11. Recommendations and Limitations

The target of this paper was to explore the relationship between employee and managers professional ethics with customers' commitment. It is recommended to adopt the study on higher star hotels, as they are expected to be more professional and may reveal other results. Future research may pinpoint the weakness in the ethical professional standards in relation to effort and work quality, to increase three-star effectiveness in the industry. Results may not represent the whole population of staff, because in Jordan it is very hard to directly contact them, especially the managers that may be a limitation. In addition, this research was cross-sectional; nothing definite can be concluded concerning causal relationships as by conducting longitudinal studies.

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Impact of Vertically Integrated Road Transport on Brazilian Sugar Export Logistics: A Mathematical Programming Application

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Abstract

Brazil currently exports 73% of the sugar produced at harvest. Approximately 75% of those exports are transported to the port of Santos and 18% to the port of Paranaguá for oversea shipment. Transportation to the two ports is mainly through the use of outsourced road transport vehicles. This study analyzes the impact of vertically integrating road transportation operations on the cost to transport raw sugar to the ports. Specifically, the study consists of an evaluation of the economic costs and benefits arising from sugar shippers using their own fleet of vehicles to transport their product to Santos and Paranaguá. Many papers have reduced logistics costs using strategies that involve a change in transport mode, most often to the railways. Although a change in modality may reduce logistics costs, vertically integrating the transport fleet into the producing company may also effectively lower costs. This article aims to (i) assess economic impacts on sugar export logistics in Brazil's South-Central region if agro-industry shippers (mills) vertically integrated their road transport and (ii) identify the optimal regional allocation of vertically integrated logistics operations. The analysis was conducted using a linear programming model designed to identify minimum, multimodal sugar export logistics costs taking into account private and outsourced shipping fleets. The model was programmed and processed with the GAMS modeling system using a CPLEX solver. The results indicate: (i) the competitive economic transportation radius using a mill's private trucking fleet is 420 km or less, (ii) the best strategy to minimize road transportation export logistics costs in Brazil's South-Central region was obtained by using a private fleet 46.30% of the time, which, if all road shipping services had been outsourced, would reduce road transport costs 5.01%, and (iii) there are a number of sugar-producing meso-regions in which the use of vertically integrated transportation operations reduced logistics costs by over 10%, even if all road transportation services were vertically integrated. The results are expected to be used to promote sugar transportation through the optimized use of private shipping fleets and stimulate further discussion of the advantages and disadvantages of vertically integrated product transport operations.

Keywords: Brazilian sugar supply chain, logistics operations, mathematical programming, optimization, vertical transport

1. Introduction

The sugarcane industry in Brazil produced 572.3 million tons of sugarcane in the 2015/2016 season, making the country the world's foremost sugarcane producer. After crushing, this sugarcane yielded 33.8 million tons of sugar. Seventy-three percent of this sugar was exported. Approximately 75% of those exports were transported to the port of Santos and 18% to the port of Paranaguá (UNICA, 2016; Ministry of Development, Industry and Foreign Trade/Secretariat of Foreign Trade-MDIC/SECEX, 2016). Brazil's South-Central region¹, which includes the states of Mato Grosso, Mato Grosso do Sul, Minas Gerais, São Paulo, Goiás and Paraná, is responsible for 92.2% of the country's sugarcane crop (Brazilian Sugarcane Industry Association - UNICA, 2016).

¹South-Central is a regional designation used by the Brazilian sugar cane industry association (UNICA)

Sugar export logistics involves product distribution from the producing agro-industrial units (mills) to ports using either road or multimodal transportation systems, the latter consisting of road transport from mills to railroads for transshipment to the port (NUNES, 2010). The road segment of sugar transportation is normally outsourced to trucking companies, particularly when the product shipper is operating in the spot market or prefers the security of a long term transportation contract (NUNES, 2010).

A number of studies have used mathematical programming to evaluate agro-industrial product logistics; however, very few of these studies have evaluated the impact of vertical integration strategies on shipping. In this context, two detailed investigations merit emphasis: a study by Oliveira (2005) illustrated the importance of railway terminal expansion and recommended the construction of new facilities to reduce sugar export logistics costs in the state of São Paulo; and a study by Péra et al. (2013) demonstrating the relevance of a private fleet of transportation vehicles in sugar road transport logistics.

The present study aims to (i) assess the economic impact on sugar export logistics in Brazil's South-Central region from the vertical integration of road transport operations by agro-industrial shippers (mills) and (ii) identify optimal vertical strategies of such an operation at the regional level. The assessment is conducted with the aid of a mathematical programming model designed to minimize sugar export logistics costs taking into account private and outsourced road fleets and the multimodal option. This study further develops a discussion proposed by Péra et al. (2013) with the use of updated logistics cost information and optimized regional road transportation strategies.

The analysis employs a quantitative approach that involves the econometric modeling of freight prices to determine road transportation logistics costs from the use of outsourced transportation services and a road transport costing model to determine road transportation logistics costs from the use of vertically integrated road transportation assets (private fleet). Results from the two models are then used to evaluate cost minimization strategies by means of optimization modeling. Scenarios are then developed and an optimization model is applied to determine the optimum road transportation strategy in each relevant South-Central Brazilian meso-region and this strategy's economic impact on sugar producer road transportation costs.

2. Method

2.1 Specification of Models Input Data

Table 1. Summary of model input data specifications

Model input data	Sources
Sugar production by county (2015)	Anuário da Cana (Sugarcane Annual Report) (2015) and UNICA (2016)
Sugar export by port (2015)	MDIC/Secex (2016)
Sugar railway terminals and cargo-handling capacity (2015)	Agência Nacional de Transporte Terrestres – ANTT (National Land Transport Agency) (2015) and Agroindustrial Research and Extension Group - ESALQ-LOG (2016)
Railway private fleet transport costs (2015)	Agência Nacional de Transporte Terrestres – ANTT (National Land Transport Agency) (2015) e ESALQ-LOG (2016)
Vertical (private) fleet road transport costs (2015)	Lima's costing model (2003) with parameters obtained from ESALQ-LOG (2016), presented in equation 2 using 37 ton capacity standard type of truck in Brazil ("bitrem basculante").
Outsourced road transport costs (2015)	Linear regression based on database price indicators of road sugar freight actually traded on the market provided by the Freight Information System (ESALQ-LOG, 2016), as shown by equation 1.
Road and rail distance matrices for origin, rail terminal and port combinations	Estimated by a Brazilian multimodal network through TransCAD.
Adopted exchange rate (R\$/US\$ 3.30)	Thomson Reuters (2015), average annual prices (commercial dollar)

Source: Organized by the authors

The proposed model will be used to identify the logistical impact and economic effect of vertically integrating road transport services, that is, the effect of using the sugar producing units' private fleet in the logistics of sugar transportation to export facilities rather than contracting outside shipping services. In addition, results from the model's run will be employed to identify the impact of a vertically integrated transport strategy on costs in the area's relevant meso-regions. The model is a linear programming mathematical construct structured to minimize sugar producing agro-industries' costs from the use of a unimodal transport system (road) and a multimodal transportation system (road and rail) to ship sugar from mills to the two major Brazilian ports. Table 1 defines the input data adopted for use in the mathematical model and lists the data sources.

2.2 Private and Outsourced Fleet Costs Models

Equation (1) shows the predictive (econometric) model adopted to determine sugar road transport outsourcing costs from a linear regression using traded freight prices for transporting sugar (ESALQ-LOG) and several parameters. Parameter values were obtained from an analysis of 5,374 observations. The results showed an R-squared of 73.40% and a 1 % significance level.

$$\text{Outsourced cost}_{od} = \theta \cdot \text{dist}_{od} + \varphi \quad (1)$$

Where:

$\text{Outsourced cost}_{od}$ is the cost of outsourced transportation between the point of origin and destination d in US\$ per ton;

θ is the slope estimated by the statistical method at US\$ 0.0339 per ton-kilometer;

dist_{od} is the distance between origin o and destination d in kilometers;

φ is the linear coefficient estimated by the statistical method at US\$ 11.2658 per ton;

Equation (2) shows the road transport costing model adopted to determine vertically integrated road transport costs (private fleet), the related fixed costs parameters (depreciation, return on capital, taxes, insurance and salary), and the related variable cost parameters (tires, lubricants and differentials, fuel and maintenance). Data provided by ESALQ-LOG, 2016.

$$V\text{Cost}_{od} = VC \cdot (\text{dist}_{od} + \text{dist}_{do}) + FC \cdot (\text{dist}_{od}/s_{out} + \text{dist}_{do}/s_{ret}) + FC \cdot (LT + UT) + TOLL \quad (2)$$

Where:

$V\text{Cost}_{od}$ is the cost of sugar company owned vehicle transport between the point of origin o and destination d , considering the return trip in dollar (US\$) per ton;

Cost_{od} is the cost of sugar company owned vehicle transport between the point of origin o and destination d , considering the return trip in dollar (US\$) per ton

dist_{od} is the one-way distance between origin o and destination d in kilometers;

dist_{do} is the return distance between point of origin d and destination o in kilometers;

s_{out} is the average vehicle speed on the outward stretch in kilometers per hour - a 60 km/h reference was adopted;

s_{ret} is the average vehicle speed on the return stretch in kilometers per hour - a reference 70 km/h speed was adopted;

LT is the vehicle loading time in hours - a 2.5 hours reference was adopted;

UT is the vehicle unloading time in hours - a 2.5 hours reference was adopted;

VC is the variable cost parameter of US\$ 0.0170 per ton-kilometer;

FC is the fixed cost parameter estimated at US\$ 0.6323 per ton-hour;

TOLL is the cost of round trip tolls in US\$ per ton;

2.3 Mathematical Formulation of the Brazilian Sugar Export Logistics System

The model's decision variables refer to the amount of sugar to be transported using either an outsourced or vertically integrated fleet from producer municipality to export port, including the possible use of multimodal transport (integrated road and rail). The objective function is to minimize logistics costs (LC), for the entire system of sugar mills in Brazil's South-Central region. Equation (3) illustrates the proposed objective function:

$$\text{MIN LC} = \left(\sum_i^I \sum_j^J \sum_k^K rc_{ijk} \cdot RF_{ijk} + \sum_i^I \sum_t^T \sum_k^K rsc_{itk} \cdot SRF_{itk} + \sum_t^T \sum_j^J mc_{tj} \cdot MF_{tj} \right) \quad (3)$$

Where:

Sets:

i : the set of raw sugar producing municipalities in the Central-Southern region of Brazil (154 elements);

j : the set of raw sugar export ports in the country (2 elements);

t : the set of sugar shipment railway terminals in the Central-Southern region of Brazil (17 elements);

k : the fleet to be used for sugar road transport, including either or outsourced fleet (2 elements);

Variables:

RF_{ijk} is the direct road flow variable in tons between origin i and destination j using fleet k ;
 SRF_{itk} is the short road flow variable in tons between origin i and rail terminal t using fleet k ;
 MF_{tj} is the rail flow variable in tons between departure terminal t and destination j ;

Parameters:

rc_{ijk} is the estimated road transport cost between origin i and destination j using fleet k , set as US\$/ton, derived from Equation (1) [outsourced fleet] and Equation (2) [private fleet];
 rsc_{itk} is the estimated parameter of road flow cost between origin i and terminal t using fleet k , set as US\$/ton, derived from Equation (1) [outsourced fleet] and Equation (2) [private fleet];
 mc_{tj} is the estimated railway cost parameter between terminal t and destination j , set as US\$/ton;
 $production_i$ is the raw sugar production parameter from each producing municipality i , in tons;
 $export_j$ is the raw sugar export parameter of each port j , in tons;
 $capacity_j$ is the rail transport capacity of each terminal j , in tons.

Minimizing logistics costs is conditioned by the following restrictions:

i. Raw sugar supply restrictions from each producing municipality i :

$$\sum_j \sum_k RF_{ijk} + \sum_t \sum_k SRF_{itk} \leq production_i, \forall i \tag{4}$$

ii. Raw sugar export demand restriction at port j :

$$\sum_i \sum_k RF_{ijk} + \sum_t MF_{tj} \geq export_j, \forall j \tag{5}$$

iii. Transport system solution - restriction that ensures flow continuity from the road portion to the rail terminal t and is considered to be zero, i.e., raw sugar losses when changing systems are not taken into account.

$$\sum_i \sum_k SRF_{itk} - \sum_j MF_{tj} = 0, \forall t \tag{6}$$

iv. Railway system limitations when dealing with raw sugar transport in observance of rail terminal t maximum capacity.

$$\sum_i \sum_k SRF_{itk} \leq capacity_t, \forall t \tag{7}$$

v. Upper limit for the private fleet portion of the system's total fleet composition (South-Central Brazil). This restriction assures a limitation on the use of a private fleet in the sugar export logistics system, which is import for the simulation of scenarios with fractional parameter β variations.

$$\sum_i \sum_j RF_{ijk='own'} + \sum_i \sum_t SRF_{itk='own'} \leq \beta \cdot (\sum_i \sum_j \sum_k RF_{ijk} + \sum_i \sum_t \sum_k SRF_{itk}), \beta \in (0,1) \tag{8}$$

vi. The upper limit of a municipality's rail system freight allotment i for rail terminal t . This restriction ensures greater adherence to the reality of sugar transport, avoiding "all or nothing" railway flows, rail concession contractual issues, and other factors. This study adopted a maximum railway weight limit for the movement of sugar of 70 % of each municipality's total weight limit ($\alpha = 70\%$).

$$\sum_t \sum_k SRF_{itk} \leq \alpha \cdot production_i, \forall i, \alpha \in (0,1) \tag{9}$$

The model was developed and processed by General Algebraic Modeling System software (GAMS) using the CPLEX solver and involved 5,377 variables and 499 equations. Processing took 2.3 seconds for each scenario with about 450 iterations.

3. Results

Figure 1 shows the calculated road transport costs for private and outsourced fleets depending on distance traveled. The graph indicates that private fleet use is comparatively advantageous within a range of up to 420 km; beyond this distance, the use of an outsourced road transport fleet is more economical: the shorter the sugar transport route, the greater the advantage gained from use of a private road transportation fleet rather than an outsourced road transportation fleet.

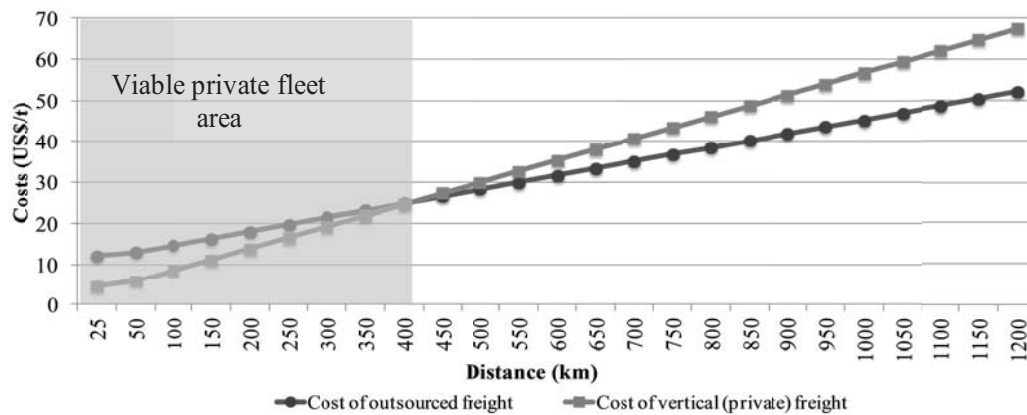


Figure 1. Costs of outsourced and vertical (private) sugar road transport according to distance traveled.

Source: Authors' research

Figure 2 shows sugar mill, port and rail terminal locations in South-Central Brazil. The figure contains a line delineating the 420 km radius within which sugar transportation by roadway to the ports of Santos (SP) and Paranaguá (PR) using a private fleet becomes economically advantageous. There are 114 combinations of sugar-producing municipalities and ports within that radius. Sugar transportation from mill to port can also be accomplished using a combination of road and rail, which can be a competitive shipping option when using a private fleet depending on the distance traveled over roadways.

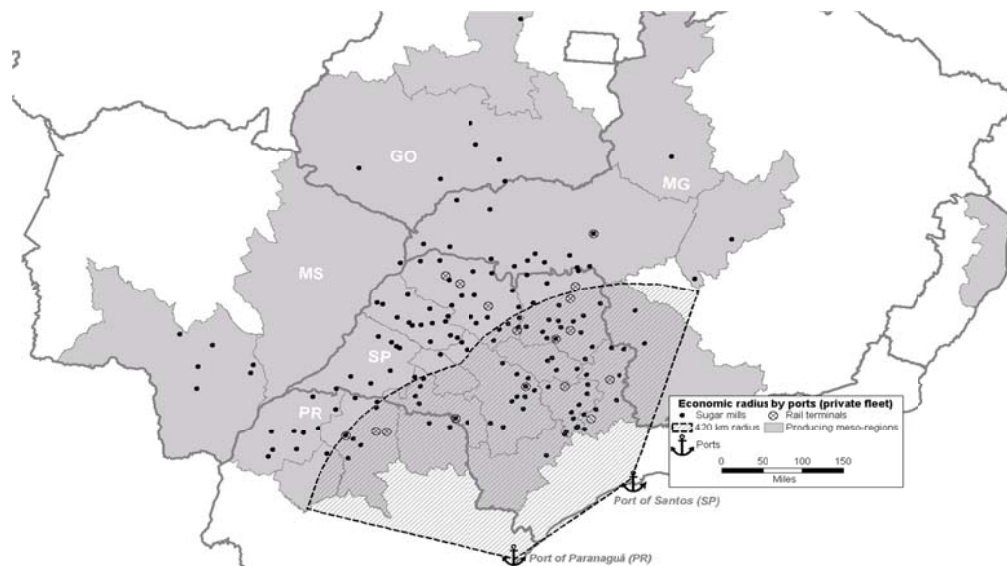


Figure 2. Mill, port and rail terminal locations and the economic radius for sugar transport to the ports of Santos (SP) and Paranaguá (PR) using a private fleet

Source: Authors' research

Figure 3 shows results from the first set of scenarios analyzed to determine the average cost of multimodal logistics (US\$/ton) using combinations of private and outsourced truck fleets to transport sugar in South-Central Brazil. In the scenario that simulates using only outsourced road transport services, average logistics costs were US\$ 25.73/ton. In the scenario that simulated using only private, vertically integrated road transport services, average logistics costs were US\$ 27.47/ton. An allocation of 46.30% of the road shipments to private fleets and 53.70% to outsourced shipping services was found to be the best strategy to reduce average exported sugar transportation logistics costs. This optimum combination of road shipping services results in an average cost of US\$ 24.44/ton, a 5.01% savings when compared to 0% use of vertically integrated shipping services.

A second set of scenarios was employed to determine the effect of vertically integrating road transport services on logistics costs for sugar transportation in individual meso-regions of South-Central Brazil. In this context, two different situations were evaluated: (i) operating with outsourced road transportation fleets only and (ii) operating with an optimal mix of outsourced and private fleets. Table 2 shows the savings generated in each meso-region by using road shipping services optimally allocated by the mathematical model between outsourced

and vertically integrated operations rather than using only outsourced services. In this regard, full vertical integration of road transport operations (both road to port and road to rail terminal) is strategically recommended in the meso-regions of Piracicaba, Campinas, central-northern Paraná state and south-southwestern Minas Gerais state. Some other meso-regions also showed potential logistics cost reductions through the use of a mixed composition logistics strategy involving both private and outsourced fleets. In other regions, not listed, there was no cost benefit derived from any use of a vertically integrated transportation fleet.

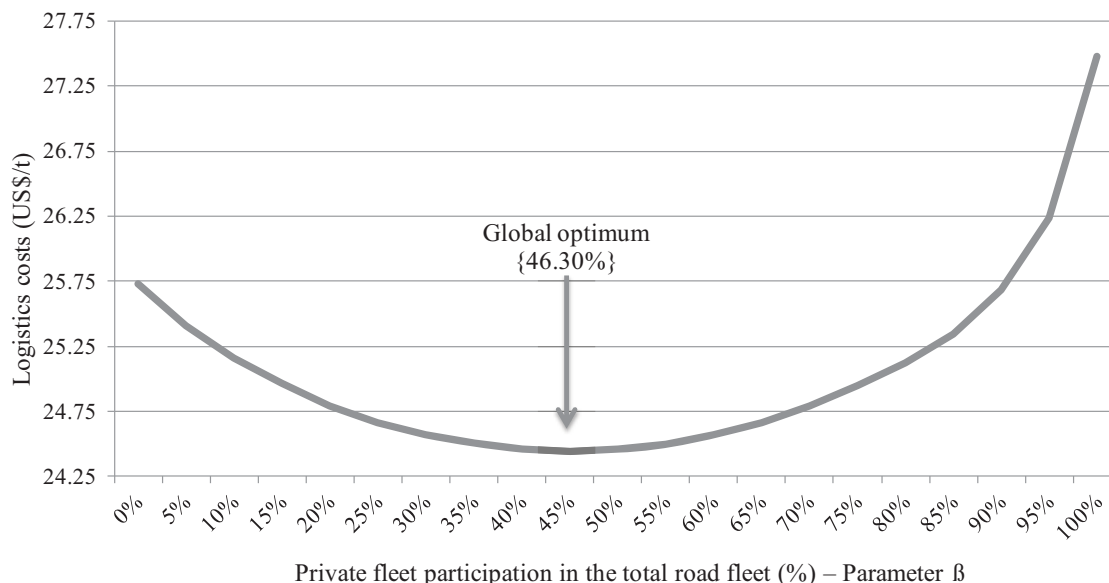


Figure 3. Multimodal logistics average sugar export costs in South-Central Brazil with reference to private fleet participation in the total road fleet (%).

Note. This curve is derived from successive optimizations considering changes in parameter β in Equation (8) ranging from 0% to 100%, under equal mathematical condition.

Source: Authors

Table 2. Logistics costs reduction potential from the optimal allocation of vertically integrated transportation operations in selected sugar producing meso-regions of South-Central Brazil

Meso-region	Optimal vertical fleet allocation in total fleet (%)	Average logistics costs (US\$/ton) ¹		Logistics cost reduction potential (%)
		Outsourced fleet only	Mill's own fleet (Optimal)	
Piracicaba	100.0%	18.85	15.12	19.77%
Itapetinga	52.0%	19.17	15.62	18.50%
Northern coast of ES	70.8%	32.96	28.20	14.46%
Campinas	100.0%	20.42	17.61	13.78%
Ribeirão Preto	70.0%	25.88	23.08	10.81%
Central-northern Paraná	100.0%	26.87	24.05	10.48%
Southeastern MS	53.3%	30.67	29.50	3.82%
Paraná's "Pioneer" North	62.0%	24.82	24.45	1.49%
Bauru	77.7%	24.18	23.86	1.33%
South/Southwestern Minas Gerais	100.0%	25.32	25.03	1.17%
Central MG State	57.7%	27.37	27.25	0.43%

Notes. ¹Average logistics cost is the ratio between a meso-region's transport costs taking into account both road and multimodal transport and sugar production in the region. Other meso-regions in Central-Southern Brazil were excluded from Table 2 as there was no cost reduction from the use of any portion of a vertically integrated fleet.

Source: Study model results

4. Conclusion

This study evaluated the impact of vertically integrated road transportation strategies on sugar mill costs to transport raw sugar from mills in South-Central Brazil to multimodal export facilities using mill owned assets. A linear programming mathematical model was structured to assess these impacts and identify the integration strategies. The study also identifies major vertical integration logistics cost minimization strategies on a meso-regional basis.

Road transport costs using the mill's fleet rather than a shipping company's fleet were found to be economically advantageous for road transport of up to 420 km, i.e., the shorter the road distance between origin and destination, the greater the economic advantage from using a vertically integrated fleet rather than an outsourced service. Moreover, after analysis of results from modeling different scenarios, it was found that the optimal strategy to minimize sugar export logistics costs when transporting sugar by roadway in South-Central Brazil was to use a mix of road shipping options, with 46.30% of the road shipments allocated to vertically integrated assets owned and operated by the product shipper (mill) and 53.70% outsourced. This ratio can bring about a 5.01% cost reduction from the cost of using only outsourced shipping services.

It was found that sugar export logistics costs on a meso-regional level can be reduced by up to 19.78% through use of an optimal mix of vertically integrated and outsourced road transportation services. Results also indicated that the use of a 100% vertically integrated road transportation fleet is recommended in four South-Central Brazilian meso-regions: Piracicaba, Campinas, central-northern Paraná state, and south-southwestern Minas Gerais state.

It is expected that the study's results will promote improvements in sugar transportation strategies through fleet optimization and will encourage further discussion of the advantages and disadvantages of vertically integrated transport systems. It is recommended that future studies on this topic should include productivity indicators for different routes in their proposed mathematical structures. One factor that influences sugar transportation productivity in Brazil that was not addressed in this study is the delay unloading trucks at ports and rail terminals and the associated effects of recent legislative changes in the fee schedule for parking while waiting to unload. The impact of these delays and charges on sugar export route choice and vertically integrated road logistics strategies should be investigated.

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Perceived Risk in Tuanzhu Group Buying and Traditional Online Buying in Taiwan

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Abstract

Consumers who have adopted tuanzhu group buying (TGB) changed from one-on-one online buying to buying led by a tuanzhu (ie. group leader). The tuanzhu integrates the demands and funds of multiple consumers and is responsible negotiating with the seller to achieve better transaction results as well as to acquire more information about the product to reduce various kinds of risk. However, the TGB mechanism is marred by delays and uncertainties, which can trigger potential customer risks. We recruited as participants 193 college students from four business schools. All students participated in the research voluntarily. The respondents were randomly assigned to the traditional online buying and TGB groups. Of the 193 surveys distributed, 146 were returned. Results of this study show that consumers' perceived risk is higher with TGB than with online buying. As a result, TGB is much more complicated than traditional online buying, and thus consumers' perceived risk is higher with TGB than with traditional online buying.

Keywords: e-commerce, group buying, internet marketing, online buying, perceived risk, tuanzhu

1. Introduction

Kalakota and Whinston (2001) noted that e-commerce is generally defined as a modernized business model that integrates shopping for commercial products with activities such as sales and the services provided through computer networks. E-commerce has been growing rapidly in recent years, which has led many researchers to try to find criteria for success in applying this new business mode (Matsuo, Ito, & Shintani, 2005)

E-commerce can be divided into five categories: business to business (B2B), consumer to consumer (C2C), business to consumer (B2C), B2P (business-to-public) and B2G (business-to-government). B2C is a kind of traditional online buying in which businesses transact with consumers through the Internet. The seller presents on its web page information about the product's appearance and features, as well as its price (usually both the list price and discounted price) and the methods of payment and delivery. Consumers then browse the web page and decide whether they want to buy the product. Traditional online buying use a fixed-price mechanism and the seller and the consumer maintain a simple one-on-one relationship in which the consumer is not connected with any other consumers. Well-known traditional online buying websites include Amazon (www.amazon.com) and Wal-mart (www.walmart.com) in the U. S. and books.com.tw and 7-11's Internet channel 7net (www.7net.com.tw) in Taiwan.

Although B2C is still very important in e-commerce, C2C is on the rise. The main reason is that C2C makes it easier for consumers to create online platforms to run their own businesses, although they can also use existing business platforms such as eBay or Yahoo's auction system. This has led many researchers to investigate online auction behavior (e.g., Ho, 2008; Livingston, 2010) or online group buying behavior.

The purpose of online group buying is to provide mass quantities of a product at a low price to aggregate population of buyers (Anand & Aron, 2003). This large number of consumers allows businesses that use group buying to avoid the cost of middlemen and save individual shipping charges by making large-volume shipments.

The savings are passed on to consumers in lower prices. The emergence of online group buying has meant that the Internet provide an electronic virtual environment that supports huge advances in consumer network community functions. In a free and virtual network space, Internet users share their experiences or compare prices, making product information more transparent. Therefore, a group of consumers with identical shopping demands – a thematic consumer community – is formed. The group can then make purchases through a bulletin board system (BBS) or a platform established by the seller.

In China and Taiwan, online group buying is referred to as tuangou. This type of e-commerce is especially popular in East Asia. According to Kauffman, Lai, and Ho (2010, p250):

For the Taiwan region, the well-known group-buying website iHergo was opened in March 2007. It was visited by 20,000 people and among them, 2,000 registered as members in the first month. During the first five weeks, 4,000 successful transactions were completed... Another reputable group-buying platform PTT was launched in March 2008. At PTT, there were more than 450 recruiting posts available every day (Kauffman, Lai, & Ho, 2010).

However, not every buying group shares identical operations. Online group buying exists mainly in three forms. (1) Group buying coupons: If a certain number of people jointly make an offer that meets or exceeds the predetermined minimum quantity, the deal becomes available to all. After paying, the consumers download their coupons through email or text messages. Finally, they exchange their coupons for the product at the company. Group-buying coupons are especially popular in Europe and the U.S. A good example is Groupon (www.groupon.com). Such group buying websites usually adopt a “deal-of-the-day” transaction model (Liu & Sutanto, 2012). (2) Online convergence, offline purchase. In this model, the website distributes group-buying certificates to users, who then directly meet at the store for the purchase, where they can request group-buying discounts from the company for the products they prefer. They reach an agreement with the company and then make their purchases. This form of online group buying is common in China; examples are Liba.com (www.liba.com) and TeamBuy (www.teambuy.com.cn). (3) Tuanzhu group-buying (TGB): In this model, the website offers consumers an exchange platform which they use to form their own group-buying teams. The leader of the team, called the tuanzhu, is responsible for team members to communicate with the seller. The tuanzhu can be a seller, a consumer, or a third party to the transaction (Kauffman, Lai, & Lin, 2010). Most group buying sites in Taiwan and Hong Kong adopt this type of business model, including the well-known Taiwanese sites BuyTogether (www.ptt.cc) and iHergo (www.ihergo.com).

Under the tuanzhu model, the group-buying leader is responsible for the group-buying team, which is consisted of users from BBS or internet users. The model is actually a combination of B2C and C2C. The buying process is detailed in Figure 1. First, the tuanzhu searches for an appropriate product. After confirming the discount requirement, the tunazhu posts a message on the site with “group buying” as the subject line. The tuanzhu then waits to see if he or she can gather enough people who are willing to meet the minimum required quantity. If this endeavor fails, the group buying is cancelled. If it succeeds, the tuanzhu negotiates the delivery and payment methods with the team members. After confirming payment from all the team members, the tuanzhu implements the agreement and delivers the products. The team members browse messages related to the group buying. If they decide to participate, they leave a message informing the tuanzhu of their contact information. They then wait for the tuanzhu’s confirmation as to whether the group buying will proceed as well as the delivery and payment methods. If the group buying is successful, users pay the tuanzhu and receive their products.

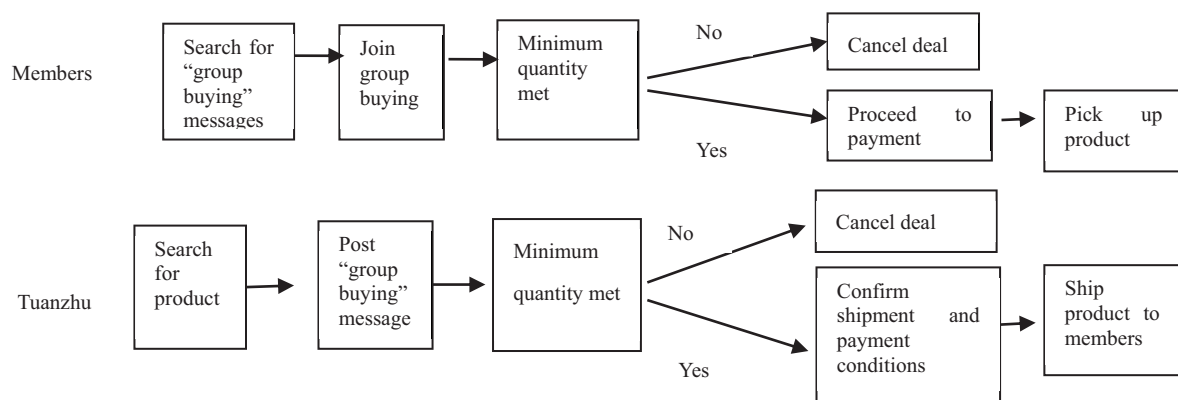


Figure 1. The group buying process for the tuanzhu and team members

2. Material Studied

We next provide some additional information on online buying, perceived risk, and TGB.

2.1 Online Group Buying

Yamamoto and Sycara (2001) stated that consumers engage a unified information system through online group buying, which enhances its benefit. Online group buying allows more consumers to participate in the process, and the competitive interactions among consumers, and the collective power that entails, lead to mutual benefits. Also, online group buying allows users to exchange messages to lower transaction uncertainty and risk.

Online group buying differs from traditional online buying group in four ways: (1) Online group buying provides volume discounts -- the more that is bought, the larger the discount. However, the discount is available only if the minimum quantity set by the seller is met (Anand & Aron, 2003). (2) Online group shopping can effectively reflect the changing relationship between the purchase quantity and price (Matsuo et al., 2005). (3) In contrast to traditional sales, consumers participating in online group buying can decide on the price they are willing to pay. This mechanism is similar to open auctions (Chen, Kauffman, Liu, & Song, 2010).

Lai and Zhuang (2004) asserted that consumers generally have three types of incentive to participate in online buying: sequence-based, time-based, and quantity-based. In Taiwan, TGB is generally geared toward quantity-based incentives. The seller sets a minimum quantity and then offers a discount once that minimum is met. Whereas members participating in group buying receive the products at a cheaper price, tuanzhus get not only the same price but also a handling fee from the team members plus a premium from the seller. Moreover, tuanzhus use their human networks to attract more people. Therefore, the tuanzhus benefit more from the process than do the team members. The sellers can benefit by capturing the attention of more consumers through the tuanzhu's human network, thereby boosting their product's exposure and achieving the benefit of word-of-mouth marketing. More purchases from consumers mean added revenue for the sellers (Anand & Aron, 2003). Because tuanzhus personally receive and distribute the product shipments, the sellers lower their administrative and channel costs. Accordingly, both sellers and consumers benefit from online group buying, a win-win situation (Li, Chawla, Rajan, & Sycara, 2004; Rha & Widdows, 2002).

2.2 Perceived Risk

The concept of perceived risk was first proposed by Bauer (1967), who defined it as the severity of uncertainty and related outcomes. Stone and Grønhaug (1993) further noted that because consumers expect products to perform well and generate satisfaction, perceived risk in the consumer behavior context should emphasize potential negative outcomes (in contrast to the emphasis on the possibility of both positive and negative outcomes that one finds in other contexts). Therefore, Stone and Grønhaug (1993) defined perceived risk as consumers' subjective expectation of loss.

The literature indicates that perceived risk is a multidimensional construct (e.g., Grewal, Gotlieb, & Marmorstein, 1994; Hanafizadeh & Khedmatgozar, 2012; Horton, 1976; Jacoby & Kaplan, 1972). This includes (1) performance risk – the loss resulting from a product performing below expectation; (2) financial risk – net loss of customers' money; (3) time risk – time wasted due to an inferior buying decision; (4) psychological risk – a negative effect on consumers' peace of mind or self-concept caused by making a poor choice to purchase the product choice or the product performing badly ; (5) social risk – harm to consumers' social status caused by purchasing the product; and (6) physical risk – bodily harm caused by using the product. Although the studies of Jacoby and Kaplan (1972) and Kaplan, Szybillo and Jacoby (1974) showed that for most product categories performance risk has the strongest predictive power on overall risk, many other researchers have found that the predictive power of perceived risk depends on the chosen product's context. For example, in a study of the predictive power of different kinds of risk on the overall perceived risk in purchasing counterfeit sunglasses, Veloutsou and Bian (2008) showed that only psychological risk significantly predicted overall perceived risk in two contexts (UK and China). On the other hand, Stone and Grønhaug (1993) found that financial and psychological risks were the significant predictors of overall perceived risk in purchasing a personal computer. Kunze and Mai (2007) found that when consumers used an online music service, performance risk and time risk were the best predictors of overall perceived risk, whereas social risk and psychological risk were the poorest predictors.

In the e-commerce literature, one finds that many studies have focused on differences in consumers' perceived risk in online versus non-online transaction modes. For example, Tan (1999) and Donthu and Garcia (1999) asserted that because online buyers are unable to actually confirm product quality during the shopping process, they have a higher level of perceived risk. Harridge-March (2006) pointed out that the risk in online transactions

stems from factors such as opportunism exhibited by anonymous trading partners, sellers obtaining personal information, and the inability of the buyer to actually inspect the product. Featherman, Valacich, and Wells (2006) found that when physical service procedures were digitalized to become online electronic services, the perceived artificiality increased the perceived risk of these electronic services. Cunningham, Gerlach, Harper, and Young (2005) and Cunningham, Gerlach, and Harper (2005) compared online flight booking with traditional flight booking, and electronic banking service with traditional banking service. They found that in both cases online users perceived a higher risk than traditional users at each stage of the buying process. In an analysis of retailers who integrate with both the Internet and physical stores to form a “multichannel,” Korgaonkar and Karson (2007) found that consumers’ channel preferences were easily affected by perceived risk. The consumers had the highest preference for prestige-oriented multichannel retailers (selling high-priced accessories, for example), followed by value-oriented multichannel retailers (offering volume discounts, for example), and, last, exclusively online retailers. Although the above researchers compared the perceived risk of online transactions with that of non-online or hybrid transactions, few studies have examined the effect of different types of online buying modes on consumers’ perceived risk. Therefore, the purpose of this study was to extend our knowledge in this area.

2.3 *The Risk in TGB*

Traditional online buying has the characteristics of B2C, a fixed price mechanism, and no connections among consumers. Along with the widespread applications of the Internet, transaction methods have become increasingly diversified. TGB is one of the emerging online transaction modes. In contrast to traditional online buying, TGB is led by a leader who ascertains market trend and receives funds from multiple consumers. The leader is responsible for negotiating prices with sellers to get lower price. In addition to benefiting the tuan Zhu, the team members, and the seller, TGB allows the tuan Zhu and the team members to obtain discounts while lowering the seller’s risk. Kauffman and Wang (2001) documented that consumers are unable to make rational purchase decisions that optimize value because of information distortion and their inability to detect related changes in all products in the market. However, in TGB, the tuan Zhu introduces and recommends the product to the consumer. In other words, prior to making a purchase, consumers receive thorough information about the product, such as its specifications, quality, and comparisons with other products available in the market. On the other hand, members that participate in TGB share their experiences and related information. This helps lower their perceived purchase risk.

However, for the TGB team to be successful, a minimum product quantities have to be recruited. Therefore, neither the buyers nor the seller can immediately guarantee a successful transaction. In other words, TGB has the disadvantages of “delay” and “uncertainty.” Delay lowers the transaction’s utility and increases the uncertainty connected with risk-aversion. These problems further decrease the ultimate value of the transaction (Anand & Aron, 2003). TGB, owing to its convergent buying characteristic, allows consumers to receive more information about the product and thus decrease their product risk. However, due to the unique nature of its transactions, TGB may enhance consumers’ risk. This is why existing theories are unable to explain consumers’ perceived risk in online group buying. Accordingly, the first research question addressed in the current study was whether consumers participating in TGB or those participating in traditional online buying perceive the greater risk.

As TGB is an emerging phenomenon, the literature has not yet addressed the difference in overall perceived risk between traditional online buying and TGB. The impact caused by the risk dimensions of both transaction groups has also not been examined. As mentioned above, perceived risks include several dimensions (psychological risk, time risk). As the purpose of our study was to explore the perceived risk of two online transaction methods, consumers’ psychological and social risks were excluded. The reason is that consumers who are familiar with computers and accustomed to conducting online transactions are likely to accept new (for them) online transaction mechanisms. Therefore, they would not perceive a different online transaction mechanism as harmful to their self-image. In contrast, consumers who insist on making their transactions in physical shops and generally resist online transactions are likely to be especially resistant to a new (for them) type of online transaction, because they would perceive it as harmful to their self-image. Similar considerations apply to social risk. If individuals’ computer usage and familiarity with online buying are minimal, their peer group or social group may influence them to accept or reject online transaction modes.

The current study focused on performance risk, financial risk, time risk, and privacy risk. Accordingly, the second research question we addressed was whether consumers who adopt TGB differ from those who adopt traditional online buying in terms of performance risk, financial risk, time risk, and privacy risk.

Answers to the above questions cannot be found in the existing literature. This study addressed two specific

research objectives. First, we compared consumers who adopt TGB and those who adopt traditional online buying to determine which group perceives the greater overall risk. Second, we compared the two groups on the specific perceived risk dimensions indicated above.

Different objects may affect consumers' perceived risk (e.g., Korgaonkar & Karson, 2007). In traditional online buying, consumers often deal with well-known shopping sites (e.g., Amazon), whereas consumers who adopt TGB frequently run into a tuanzhu and members of that tuanzhu's group whom they are unfamiliar with. Applying information economics to the area of brand management, Rao, Qu, and Ruekert (1999) proposed that sellers use "signals" to reliably transmit unobservable product information to buyers. These signals may include items such as certificates, advertising expenses, and brand. Although in the TGB context tuanzhus and their members can provide information on different products, it is difficult for the information to become a signal of reduced perceived risk. The reason is that consumers often do not know the members and lack understanding of the tuanzhu's background information. In addition, the average group-buying website does not offer a rating system of the product's characteristics. As a result, the information on group-buying websites is often unconvincing. On the other hand, a certain level of uncertainty exists in the TGB procedure. For example, consumers are uncertain as to whether members are likely to join the TGB, and if so how many and when, as well as whether their expectation of a lower price would be met. Therefore, we posited the following hypothesis:

Hypothesis 1: TGB consumers perceive greater risk than traditional online buying consumers.

Performance risk denotes errors and failures to operate normally during traditional online buying and TGB. The traditional online buying process is relatively simple. Consumers need only decide which product they wish to buy. They then purchase the product online and make the payment transfer. The buyer only has to contact a well-known online buying website. With TGB, although the transactions can be conducted on well-known websites/portals, the process requires the tuanzhu to play the role of communicator between a large number of TGB members and the seller. In addition, the tuanzhu must handle many other duties, including payments and deliveries. Unfortunately, the professionalism of tuanzhus varies and their level of information transparency trails that of well-known online buying sites. In addition, they have to handle complicated transactions as well as product returns/exchanges. On the other hand, with traditional online buying, returns and exchanges are generally made directly between buyers and sellers. As a result, consumers are more concerned about running into problems with TGB than with traditional online buying. Therefore, we put forth the following hypothesis:

Hypothesis 2: TGB consumers perceive higher performance risk than traditional online buying consumers.

Financial risk is related to the money spent in the original purchase and subsequent maintenance costs. In addition, it can include financial losses arising from fraud (Featherman & Pavlou, 2003). In contrast to the case of well-known shopping sites, TGB members often do not know the tuanzhu. Thus, they may be concerned about financial losses that might occur if they pay for but do not receive the product. Therefore, we posited the following hypothesis:

Hypothesis 3: TGB consumers perceive higher financial risk than traditional online buying consumers.

In traditional online buying characterized by fixed-price sales, consumers generally make purchases and payments immediately. In TGB, tuanzhus must wait for members to join to enhance their price negotiation ability. If the minimum quantity is not met, consumers' expectation of drop in price will be nullified. In this case, consumers must continue to wait for the tuanzhu or some other tuanzhu to launch another purchase. Even if the purchase is successful and the seller completes the transaction, consumers have to wait for the tuanzhu to determine the delivery time and handle the delivery. As a result, the consumers are likely to experience different types of delays during the buying process. Therefore, we put forth the following hypothesis:

Hypothesis 4: TGB consumers perceive higher time risk than traditional online buying consumers.

Lee (2002) indicated that protection of personal information has the highest relative importance in online purchasing. With traditional online buying, consumers' personal information related to making a transaction is processed and saved by well-known shopping sites. With TGB, consumers frequently have to deliver personal information to the tuanzhu, whom they are unfamiliar with. In addition to payment time, name, address, and phone number, some consumers are even required to give partial or complete bank account numbers. Although consumers are reluctant to reveal confidential information to an unknown third party (Mascha, Miller, & Janvrin, 2011), they still face the threat of opportunism from the tuanzhu. For example, the tuanzhu may sell member's information to email advertisers or other potential sellers of related products. Also, the tuanzhu may disclose members' information accidentally. For example, if the tuanzhu's computer is infected by a Trojan virus, members' personal information could be stolen or even leaked to fraudulent organizations. Therefore, consumers

participating in TGB would be expected to have more concerns that their personal information will be abused than would traditional online buying consumers.

Hypothesis 5: TGB consumers perceive higher privacy risk than traditional online buying consumers.

3. Method

3.1 Pre-test

To ensure that the experimental situation conformed to the expectations of the participants, we distributed a pre-test questionnaire to 40 college students from business school to measure their interest in buying various products online. The results showed that cake was a suitable product for the formal experiment. This product also conforms to Taiwan's present circumstances in that food is one of the most popular products categories in Taiwan for online purchase.

3.2 Participants

Because college students are familiar with online buying, past studies mostly used college students as the research participants (e.g., Lee & Tan, 2003), and then we students to join invented in the study. We recruited as participants 193 college students from four business schools. All students participated in the research voluntarily. Prior to the start of the research, respondents were clearly informed about the anonymity of the survey and that it was purely for academic purposes.

3.3 Materials

The survey questionnaire begins with questions about participants' sex, age, Internet use habits, and demographics. Past studies differed in the dimensions, definitions, and measurement of perceived risk. For example, in examining online buying, researchers usually have included the privacy risk dimension into perceived risk (e.g., Ueltschy, Krampf, & Yannopoulos, 2004; Zhao, Hanmer-Lloyd, Ward, & Goode, 2008) and operationalization of the risk dimensions was associated with purchasing specific products (e.g., Stone & Grønhaug, 1993). However, our emphasis was not on specific products but on online transaction modes. The latter theme is more compatible with that of Featherman and Pavlou (2003), who studied the perceived risk of electronic services. Therefore, we followed Featherman and Pavlou (2003) in specifying the risk dimensions, and defining and measuring perceived risk. This led us to specify overall risk, performance risk, financial risk, time risk, and privacy risk as our dimensions. Modifications were then made to the items in Featherman and Pavlou's (2003) questionnaire according to mode. For example, one item measuring financial risk in traditional online buying is: "Buying a cake online subjects my bank account to potential fraud." The corresponding item for TGB is: "Group buying a cake online subjects my bank account to potential fraud." One item on privacy risk in traditional online buying is: "Buying a cake online would lead to a loss of privacy for me because my personal information would be used without my knowledge." The corresponding item for TGB is: "Group buying a cake online would lead to a loss of privacy for me because my personal information would be used without my knowledge."

3.4 Design

The independent variable in our study was online buying mode (traditional online buying vs. TGB) and the dependent variable was perceived risk. Traditional online buying was defined as buying through online websites and TGB was defined as group buying on group-buying websites initiated by a tuanzhu. The literature shows that product category and features (e.g., Ueltschy et al., 2004), channel characteristics and product reputation (e.g., Kauffman, Lai, & Ho, 2010), online buying experiences (e.g., Soopramanien, Fildes, & Robertson, 2007), and payment method affect perceived risk. Therefore, the above variables were kept constant across modes. For both modes, we used website reputation purchasing experience and payment term as control variables. The objective was to purify effect of perceived risks on transaction modes.

The respondents were randomly assigned to the traditional online buying and TGB groups. There is no missing data.

3.5 Procedure

The experiment was conducted in a laboratory equipped with projector equipment. After explaining the buying situations with Powerpoint, respondents were given ample time to complete the survey.

4. Results

4.1 Descriptive Statistical Analyses

Of the 193 surveys distributed, 146 were returned, 94 from female respondents and 52 from male respondents.

Most of these participants were under 20 years of age (58.2%), 45.2% were full-time students, 36.3% had part-time jobs, 18.5% had full-time jobs, and 62.3% had online group-buying experience (see Table 1). As shown in Table 2, the means for the individual risk dimensions ranged from 2.99 to 3.54, and Cronbach's α of risk dimensions ranged from 0.78 to 0.89, exceeding the threshold of 0.7 suggested by Nunnally (1978).

Table 1. Descriptive Statistics for the Demographic Variables

Variable	Range	Frequency	Percentage
Sex	Male	52	35.6
	Female	94	64.4
Age	Under 21	85	58.2
	21-30	57	39
	Over 30	4	2.8
Employment	Full-time job	27	18.5
	Part-time job	53	36.3
	Full-time student/Not working	66	45.2

Table 2. Descriptive statistics for the perceived risk dimensions

Dimension	Mean	SD	Cronbach's α
Overall risk	3.10	0.80	0.89
Performance risk	3.37	0.66	0.78
Financial risk	3.09	0.70	0.81
Time risk	2.99	0.81	0.85
Privacy risk	3.54	0.78	0.81

4.2 Independent Sample T-tests

Independent sample *t*-tests were performed comparing the two buying mode groups (traditional online buying and TGB) on the different dimensions of perceived risk. As illustrated in Table 3, the mean differences between the two groups on financial, performance, privacy, time, and overall risk all reached significance ($p < 0.05$) with the TGB mean being higher than the traditional online buying mean in all cases. All five hypotheses were thus supported.

Table 3. Independent *t*-tests comparing traditional online buying and TGB

Dimension	Mean	TGB Mean	t value
Overall risk	2.89	3.31	3.312***
Performance risk	3.17	3.56	3.783***
Financial risk	2.92	3.26	2.750**
Time risk	2.83	3.14	2.421*
Privacy risk	3.40	3.68	2.164*

* $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$

5. Discussion

The online transaction and perceived risk literature generally compares online transactions to purchases at physical stores (e.g., Cunningham, Gerlach, Harper, & Young, 2005; Huang, Schrank, & Dubinsky, 2004). This study extends the related data on perceived risk to comparisons of two online transaction modes (traditional online buying vs. tuanzhu online group buying).

The existing literature rarely addresses the perceived risk of online group buying. For example, Kauffman, Lai, and Lin (2010) analyzed the effect of textual comments and existing bids on perceived financial risk and psychological risk. There are two major differences between the present study and that of theirs. First, their study focused on whether a consumer's decision to bid or not bid on a product was based on the textual comments of a specific tuanzhu or existing bids of those who had already decided to use group buying. Our study, however, emphasized the possibility that differences in customers' perceptions of the risks in traditional online buying vs. TGB. Second, their study focused mainly on financial risk and psychological risk, whereas our study discussed two other risk dimensions, privacy risk and time risk, that are very important in online transactions.

Our empirical findings support the hypothesis that overall perceived risk is higher in TGB than in traditional online buying. In other words, the uncertainties arising from TGB, such as consumers' unfamiliarity with tuanzhu/team members and whether the group buying would be successful, evokes a higher level of perceived risk.

The performance risk of TGB was perceived as higher than that of traditional on line buying, supporting Hypothesis 1. Because TGB involves at least three parties (seller, tuanzhu, and buyers) and thus is more

complicated that traditional on line buying, consumers may be concerned that the group buying process in TGB will be unsuccessful or run into problems. Results also showed that the TGB group perceived higher financial risk than the traditional on line buying group, presumably because they were concerned about financial losses arising from being cheated by the tuanzhu, with whom they were unfamiliar. As for time risk, Anand and Aron (2003) stressed that delay is an important characteristic of group buying. The findings of our study support this view. The perceived time risk for the TGB group was significantly higher than that for the traditional online buying group. The operative delays likely include the time consumers waste waiting for members to join, looking for other group-buying opportunities if the group fails to meet the minimum quantity, and having to come to terms with the tuanzhu at delivery time. Lastly, consumers adopting TGB must submit their personal information to the unfamiliar tuanzhu. Concern that their personal information would be leaked explains why the TGB group scored significantly higher than the traditional on line buying group on perceived privacy risk.

Even though, as we have shown, Taiwanese consumers' perceive greater risk if they adopt TGB than if they adopt traditional online buying, TGB has rapidly developed in recent years to become an especially popular online buying mode. This can be attributed to the cultural characteristics proposed by Hofstede, Hofstede, and Minkov (2010). Their data show that residents of Taiwan have higher risk-aversion than residents of mainland China and Hong Kong. In other words, Taiwanese consumers are very inclined to use clear legal, system, guidelines, and protection to lower risk and uncertainty. Even though these mechanisms are not established parts of TGB systems, consumers still find TGB appealing. Our study suggests that the major reason for the popularity of TGB is related to Taiwan's inclination toward collectivism, that is, Taiwanese consumers seek interactions with others during the buying process. The purpose of TGB is to gather consumers together who are interested in the same product. During the buying process, participants share detailed product information, usage experiences, and even tidbits about what life is like on the group-buying website. Therefore, even though consumers adopting TGB perceive greater risk than consumers using traditional online buying, they prefer TGB because they are driven by collectivism. In addition to enjoying the discounts and fun of collective shopping, members also develop social networks.

Although group buying is booming in all of East Asia, the cultural characteristics of China, Hong Kong, and Taiwan are different. According to Hofstede et al., (2010), Taiwan has the highest risk-aversion to uncertainty, followed by China and then Hong Kong. Taiwan also has the highest inclination toward collectivism, followed in this case by Hong Kong and then China. In China, the most popular form of group buying at present is "online convergence, offline buying." In this mode, consumers converge in mass numbers and buy products online, but they must bring a certificate to the seller to claim their product. Despite the large number of participants, communicating through messages, which is popular in Taiwan, is not common in China. This could perhaps be explained by the weaker inclination toward collectivism in China. In addition to converging online to chat, TGB members in Taiwan converge at a certain location to claim their products. Because the tuanzhu delivers the products only at a certain time, the consumers must converge at this same time. While they are waiting, they can chat, exchange experiences, examine the products, inform others in the group about their next purchase, and share their experiences with other products. This group-buying mode is very different than what is practiced in China. That means in Oriental societies favoring collectivism, cultural differences still create different preferred online group-buying modes.

5.1 Practical Implications

Because the TGB process involves not only a seller and consumers but also a negotiation relationship among buyers, practitioners of e-commerce should pay special attention to our key finding that consumers' perceived risk is higher with TGB than with traditional on line buying. If these practitioners could alleviate consumers' doubts and risk concerns, they could perhaps facilitate the further development of TGB.

First, because TGB is likely to be its members' first experience with group buying, it is important to establish a comprehensive rating system on the group buying platform to reduce mutual distrust between the tuanzhu and the members. In addition to providing general rating mechanisms, the platform should allow customers to give their overall rating of tuanzhu after each transaction. It should provide detail information such as the tuanzhu's success rate, and the average time needed to successfully form a group, and deliver goods. These features would allow previous buying records to be truly reflected and help remove members' risk concerns prior to joining the TGB team. The group-buying platform can also include instantaneous chat software to enhance interaction among sellers, tuanzhus, and members, thereby reducing the likelihood of conflicts and misunderstanding arising from communication errors, lowering the risk of bad purchase decisions, and reinforcing the efficiency of negotiation and discussion.

Lastly, online group buying's return policy is often trickier than it is with physical or individual online buying. Because in TGB the tuanzhu is the window of communication to the seller, the members should ask the tuanzhu to handle the related matters whenever there is a problem with the product. Alternatively, consumers can directly access the group-buying platform or the seller. Although there is often a grey area, consumers tend to be more concerned about the consequences of participating in group buying than traditional online buying. Therefore, the group-buying platform should communicate clear policies on this issue to ensure that consumers' rights are protected.

5.2 Limitations and Suggestions for Future Research

This study used text descriptions supported by Powerpoint to construct hypothetical buying situations. Future researchers should consider obtaining authorization from actual online buying and group-buying websites to present actual web pages in their studies. By doing so, they would enhance the authenticity of the situation and allow respondents to be more involved in the buying.

Also, this study adopted convenience sampling of Taiwanese college students, thus limiting the generalization of the results. First, college students of different nationalities may differ in how much experience they have using the Internet. Second, college and non-college students may differ in how they use the Internet generally and buy online specifically. These differences may lead possible impact on perceived risk and these would be good topics for further study.

At the same time, due to cultural diversity, nations may differ in which group-buying modes are the most popular. These different modes may create differences in perceived risk and its dimensions. Therefore, we suggest that future studies compare perceived risk in different group-buying modes.

This study's comparison of the risk perceived in different online transaction modes involved differences between traditional online buying and TGB. Subsequent studies can extend the research scope to differences in perceived risk with other online transaction modes, such as surrogate buying and Internet auctions.

The sample in this study did not include consumers who had more than two group buying experiences; rather, the sample was limited to persons using group buying websites for the first time. After the members and the tuanzhu have worked together several times, their degree of mutual familiarity is enhanced. Would consumers' perceived risk then gradually diminish? If so, how big is the decrease? After working with the tuanzhu several times, would these consumers have similar or even lower perceived risk than consumers using traditional online buying? These are all possible questions for future studies.

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A Study on Housing Price in Klang Valley, Malaysia

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Abstract

The main aim of this study is to measure the factors influencing housing price in Klang Valley, Malaysia. This paper examines empirically whether the increasing trend in the Malaysian housing price is associated to changes in the population, construction cost, housing speculation, and inflation rate. The paper is exploratory in nature. The data is collected via questionnaire survey form distributed to youngest respondents in the sample area which is Klang Valley region. Each single elements are calculated its average index respect to few level of influence under respondents opinion. The index will then treated as influencing level of the factors. The paper delivers empirical outcomes that the population, construction cost and housing speculation are the main factors of housing prices. However, fluctuations in housing prices could not necessarily be influenced by the inflation rate. The overall result of this paper strongly recommends that housing price in the Malaysian residential property market is increasing continuously. Therefore, efforts to control the hike in housing price is needed by government and policy controllers in order to maintain the affordable to own a house in Malaysia.

Keywords: housing price-population, housing price-construction cost, housing price-housing speculation and Price inflation.

1. Introduction

Housing plays a very important role in our life. Housing is an important fix asset for the people as well as a basic need for the citizen. Nowadays the housing price in Malaysia is much higher compare to last time. The higher price gives a huge problem for the low income group in the developing country (alaghbari, 2008). The government also has implemented some policies and programs such as PRIMA (1Malaysian People's Housing Programme), First Home Scheme and PPA1M (1Malaysian Civil Servant Housing Programme) to ensure that Malaysians have a chance to obtain a place to stay. In Malaysia, the development of housing project is carried by the two main sectors, private and public sectors. Besides that, government of Malaysia also has established set of housing policy which focuses on the housing delivery and production which have the involvement of private sector, especially in housing scheme development (Ong, 2013).

In the recent years, Malaysian economics have grown rapidly and this lead to the increase of the residential housing's demand among the city areas in Malaysia. Due to the demand, the price of housing at cities is increasing. In the past few years, market of residential house in Malaysia has experienced a significant price expansion throughout Malaysia especially in Klang Valley. There are also many housing projects around the urban areas in Klang Valley nowadays. The housing price is continuously increasing in Malaysia but the average of the Malaysian household income is not increase in same level. In 2013 the average monthly income is only RM3686 (Zheng, 2014). So the majority of citizen in Malaysia are worry about increasing of high housing price. According to the data of Valuation and Property Services Department (JPPH, 2015, housing price has increased about 45% in the past 10 years.

The Malaysian housing price index increases yearly. In 1990s, the Malaysian housing price index was around 100 annually, but in 2010, the housing price index has increased in a big margin to around 275 annually. According to the (NAPIC 2013), the Malaysian transaction on housing property was increasing from the year 2007 till year 2012. In 2007 the transaction was around 500 million and increased to 1500 million in 2012. The increase of transaction is not only for the residential property, it is also involves of industry and development property. According to the Malaysian Deputy Finance Minister (2011), the Malaysia's average housing price is increasing up to 20% each year after the economic recession in 2007. Most of the people are wondering that such

high annual increase in housing price will lead them to face unaffordability to own a house (Ong, 2013). For example, before 2008, people can buy a terrace house around Kuala Lumpur at RM 250,000 to RM 450,000. But after 2008, the price had already gone up. In 2012, a terrace house around Kuala Lumpur areas cost around RM 500,000 to RM 900,000. This shows the transaction of houses increase the property trading. Once the market is active, it leads to the increase the housing price. It shows that the housing price increasing rapidly compare to last 10 years and it lead to become a common problem that face by all the Malaysian citizen. This price hike affects the society and standard of living, it also showing an unhealthy growing of Malaysian economy. So it is important to find out the factors that lead to this problem and state the relationship between the factors and the problems.

2. Research Objective

- 2.1 *To Determine the Relationship between Population and Housing Price in Klang Valley, Malaysia.*
- 2.2 *To Determine the Relationship between Construction Cost and Housing Price in Klang Valley, Malaysia.*
- 2.3 *To Determine the Relationship between Housing Speculation and Housing Price in Klang Valley, Malaysia.*
- 2.4 *To Determine the Relationship between Inflation Rate and Housing Price in Klang Valley, Malaysia.*

3. Literature Review

3.1 Housing Price

Housing price has become one of the main focuses for the past 10 years' time in Malaysia. According to Chen (2000), people in Malaysia needed a total of 8,850,554 houses. Therefore, 3,581,643 units of new housing have to build within the next ten years. But there are only 1,790,820 units were built in these ten years. So, the change of policy is needed to face the population growth (Chen, 2000). According to Anand (2015), median range of house price in Kuala Lumpur was stated around RM 490, 000 to RM 555, 000. This is nearly 5.4 times compared to other main cities in Malaysia. Due to the policy of the Malaysian government to recover of Malaysian economic, encourage the foreign investment in the housing market. The demand of the housing in the market has been increase but the supply in Malaysia unable to fulfill the market demand. Therefore, housing price in Malaysia is expected to be increased due to the imbalance of demand and supply (Levin, 1997).

3.2 Population

Total population is called a universe (Barakova, 2003). In today's world, the population in Malaysia is rapidly increasing. The citizen required more houses to stay, but in Malaysia the production of houses is slow due to many regulation, law and also procedures on development of houses. According to Vemeulen and Van Ommeran (2006), "people will move to another area where houses are built, but the houses are not necessarily built in the area where people would want to live". The main reason of buying houses in this area is due to the working place, cheaper rental and convenience and facilities. Better facilities and environment which attract more people move to this area will lead to increasing of housing price. In the economy sector, although there are a lot of other factors that led to increase the housing prices, but growth of the population might be one of the significant factor (Mulder, 2006). Fast urbanization is perhaps an exclusive factor driving the housing market in one country. The increasing of the urban population during the past ten years due to the fast urbanization led to the change of the household structure (Hou, 2010). Urbanization in Malaysia is expanding rapidly, the total amount of urban centers which have population of 10,000 and above in Malaysia have increase 11 percent each year. 70 percent of the Malaysian total population is living in the city and become an urban society (Hassan, 2009). In the period 1995-2005, there is 68.8 per cent of internal migration in Malaysia. Due to the rapid transformation into an urban society, the demand for the housing in the cities is continuously increasing. The number of children and teenager also increase and eventually lead to future housing issues when they grow older, the need for the housing will be increased as well. The rapid increasing of the population leads to the increasing on housing demand in the market in the future.

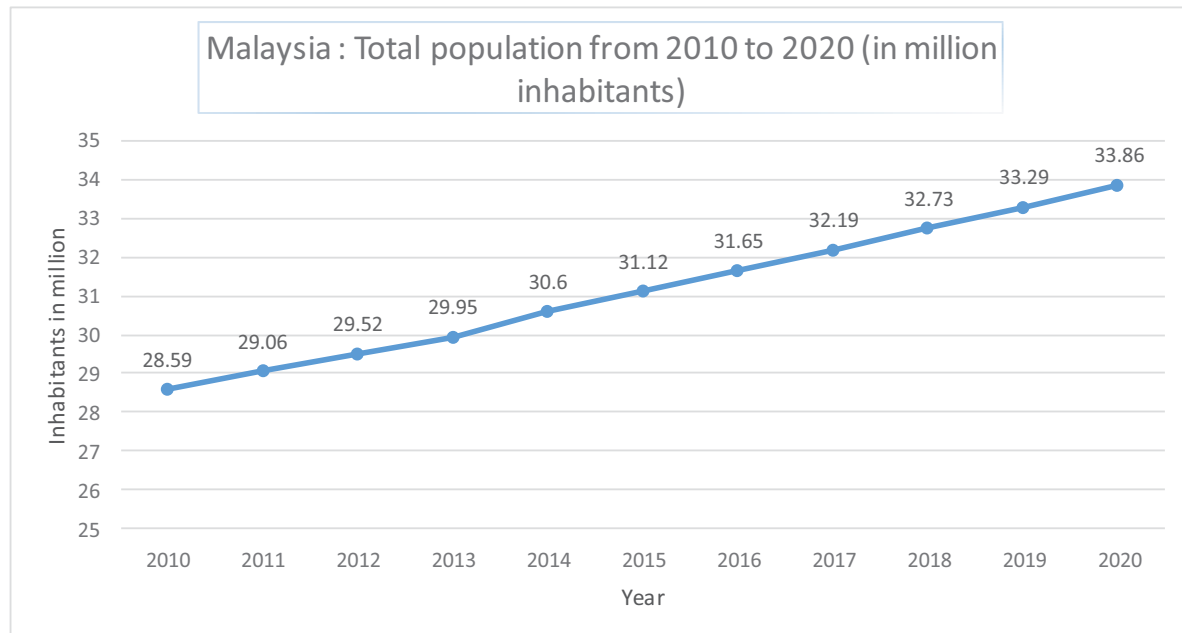


Figure 1. Population of Malaysia

Sources from (Statistics Malaysia, 2015)

3.3 Construction Cost

Construction cost defines as the expenses that involved such as contractor for labor, material, equipment in developing of houses (Kassim, 2005). According to the Haron (2005), the cost of construction will be one of the important subject in the project of housing development and it is led the project to success or failure. The cost of construction can be define as resource of the project planning, budgeting cost, cost estimating, and cost of control on the material cost, labor, machinery, technology, and cost of transportation (Mohammed, 2003). In the construction project, cost of material is one of the highest financial load. Due to the increasing in the cost of material, the developer will not bear the cost due to increasing in material but transfer the cost to buyer by increasing the housing price (Ibrahim, 2012). The labor cost also included in the construction cost that involved in a development project. The construction sector in Malaysia is affected by the shortage of skilled labor force. Working in a construction side is hard compare to other work and it needed more physical energy, so that the Malaysian citizen are less involved in it, and the developers need to depend on the foreign labor who are willing to earn less but do more in work. The Malaysia constructor required more labor from foreign country to fulfill the requirement of general construction working with the lower payment compare to the local labor. Hence, during the shortage the improvement of wages and the benefits for winning labor force, identical with high rate of development (Sambasivan, 2007).

3.4 Housing Speculation

Housing speculation is the action of financial transaction, or trading of an asset, which have a significant risk of losing or all of the initial outlay, in expectation of substantial gain. Malaysia has listed as the tops Asian country to invest in, said by The Global Property Guide. Malaysia has a mix of the relatively low round-trip purchases costs, high rental yields and low capital gain taxes which will be very attractive for the investor to invest in the property market (Mohammad, 2010). A Consumer Trends Survey which done by the Malaysian property website (IProperty.com.my, 2010) which shows that Malaysian investors are more likely to invest in the high end properties. Due to the positive speculation on the housing, it will lead to increase in housing price, increase in vacancies, increase in mortgage rate, and increase in the residential investment. It is the change of the expectation about the future house price by homeowners and housing investor. The intuition behind the restriction on the housing price is that the prospect of being able to sell the house at higher price in the future so it leads to higher price now. The speculation in housing market can be a group of treats speculation as a deviation from a model benchmark. According to Glaeser (2012), easy credit cannot explain the full extent of the housing boom and this leave door open for a potentially important role of irrational expectations (Towbin, 2014). In the financial market, the relationship between housing price and speculation is injurious to the public because they heighten price fluctuations. It creates a rapid increase of housing price and it may create speculation of housing

price boom or bubble. The investor will speculate property prices because of the rapid growth of housing price. However, the speculation is qualified through the number of confirmer transaction as the transaction will be increased itself from time to time. Active speculation in the market will direct increase the price of housing in the area due to the expectation of the investor in this market (Larsen, 2010). But it will also lead to price boom and bubble in this area. Malaysia is one of the most active market in the Asian country.

3.5 Inflation Rate

Inflation is defined as the price for services and goods is increasing continuously and the purchasing power of currency is decreasing. Central banks are the main party who playing an important role to control the inflation, and avoid deflation. During the inflation, price for good and services will be increased. Due to this, the material of the construction will be increased as well. When the money supply increase, it will cause the house price increase and it already note by the global scenario (Ong, 2013). The government tended to react to this by imposing strong austerity policies and macro-economic controls, which often led to economic depression afterward. The high inflation will have a serious impact to the developers and state-owned enterprises who are the dominant buyer of commodity housing. Inflation will affect the housing price through the increasing of the cost of construction. Comparing the price of new and old houses, the new houses will be more expensive on average than the older. Next is the impact on rent, when the rent fee increase, it will lead to increasing of the housing price because the price of the house is equal to the present value of future streams of actual or imputed rents. Thus, inflation impact house prices through increase of the rents.

3.6 Research Framework

The dependent variable of this study is the housing price while the independent variables of this study are the population, construction cost, housing speculation, and inflation rate.

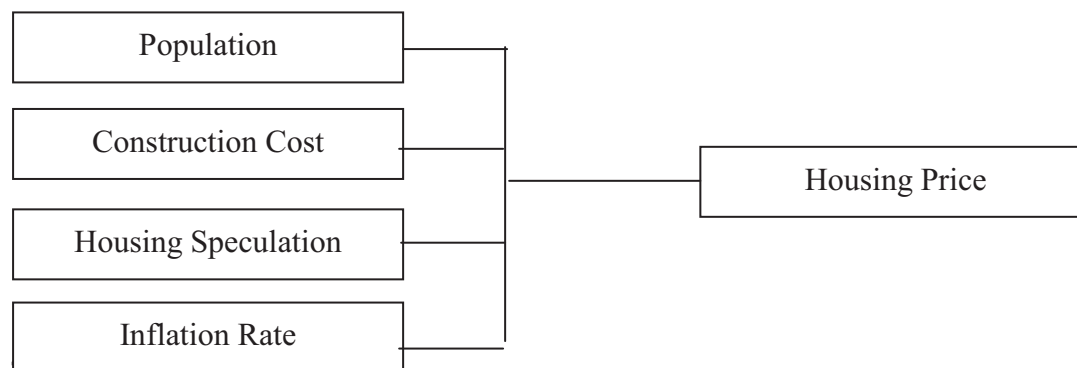


Figure 2. Research Framework

4. Method

This study is an exploratory in nature with a quantitative approach. The data is collected via questionnaire survey form distributed to 120 youngest respondents in the sample area which is Klang Valley region. Each single elements are calculated its average index respect to few level of influence under respondents opinion. The index will then treated as influencing level of the factors. These data were later analyzed using Statistical Package for Social Science (SPSS) version 21.0.

5. Analysis and Interpretation

This aim of this study is to investigate the most significant factors that influence the housing price among youngest in Klang Valley, Malaysia. The factors which have chosen to examine for this study is population, construction cost, housing speculation, and inflation rate. The relationship between housing price and the four factors were analysed in chapter four.

5.1 Correlation Analysis

Housing price shows an average correlation with population, construction cost, and housing speculation. While housing price shows a very low correlation with inflation rate. Population shows a moderate correlation with housing price, construction cost, and housing speculation. While population show a very low correlation with inflation rate. Construction cost has a moderate correlation with housing price, and population. Correlation between construction cost with housing speculation, and inflation rate is low. Housing speculation has a moderate correlation with housing price, and population. The correlation between housing speculation with construction cost, and inflation rate is low. Lastly, inflation rate has a very low correlation with housing price,

and population. A low correlation exists with construction cost, and housing speculation.

Table 1. Correlation Analysis

		Correlations				
		Housing price	Population	Construction cost	Housing speculation	Inflation rate
Housing price	Pearson Correlation	1	.491**	.468**	.400**	.099
	Sig. (2-tailed)		.000	.000	.000	.283
	N	120	120	120	120	120
Population	Pearson Correlation	.491**	1	.361**	.460**	.051
	Sig. (2-tailed)	.000		.000	.000	.582
	N	120	120	120	120	120
Construction cost	Pearson Correlation	.468**	.361**	1	.292**	.210*
	Sig. (2-tailed)	.000	.000		.001	.021
	N	120	120	120	120	120
Housing speculation	Pearson Correlation	.400**	.460**	.292**	1	.135
	Sig. (2-tailed)	.000	.000	.001		.141
	N	120	120	120	120	120
Inflation rate	Pearson Correlation	.099	.051	.210*	.135	1
	Sig. (2-tailed)	.283	.582	.021	.141	
	N	120	120	120	120	120

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

* . Correlation is significant at the 0.05 level (2-tailed).

5.2 Multiple Regression Analysis

36.1% of the dependent variable (housing price among youngest) can be explained by the four independent variables (population, construction cost, housing speculation, and inflation rate) in this study. The following 63.9% of the dependent variable is explained by other independent variable which are not been examine in this study. The arrangement of strengths among the independent variable (population, construction cost, housing speculation, and inflation rate) that contributes to the dependent variable housing price) are population (B= .300), construction cost (B= .310), housing speculation (B= .172), and inflation rate (B= -.005). For each of the variable, the significant value will show whether these variable contributed significantly to the equation. The hypothesis will be accepted if the value of significant is less than .05.

Table 2. Multiple Regression Analysis

Dependent Variable	Independent Variable	Coefficient Value (B)	Significant Value (Sig)	R ²
Housing Price	Population	.300	.001	.361
	Construction Cost	.310	.000	
	Housing Speculation	.172	.047	
	Inflation Rate	-.005	.951	

5.3 Hypotheses Result

Table 3. Hypotheses Result

Hypothesis	Results
H1: There is a positive relationship between the populations and the housing price in Klang Valley, Malaysia.	Accepted
H2: There is a positive relationship between the construction costs and the housing price in Klang Valley, Malaysia.	Accepted
H3: There is a positive relationship between the housing speculation and the housing price in Klang Valley, Malaysia.	Accepted
H4: There is a positive relationship between the inflation rates and the housing price in Klang Valley, Malaysia.	Rejected

6. Overall Finding Based on the Research Objectives

The aim of this study is to investigate the most significant factors that influence the housing price among youngest in Klang Valley, Malaysia. The factors which have chosen to examine for this study is population, construction cost, housing speculation, and inflation rate. The relationship between housing price and the four factors was analysed in chapter four.

6.1 To Determine the Relationship between Population and Housing Price in Klang Valley, Malaysia

The relationship between population and housing price is positively related. There are few researches which states that, population had positive relationship with housing price. According to Mulder (2006) population is the

main key factor which affecting the housing price, people will move to the area houses are built or the area which more convenience or have more people living in. According to Hassan (2009) 70% people live in city and it shows population is one of the factors that influencing living area, thus it will lead to effect of housing price. Besides that Hou (2010) states that increase of the population leads to the expanding of urban area. Indirectly this will lead to the increase of housing price.

6.2 To Determine the Relationship between Construction Cost and Housing Price in Klang Valley, Malaysia

The construction cost positively related with housing price. According to Kassim (2005) construction cost has direct influence on the housing price due to the raw material. The price hike in raw material will increase the housing price. According to Haron (2005) construction cost will be included into the developers' account when they develop any housing projects. According to Ibrahim (2012) construction cost is the production cost of housing development and it will increase the selling price of a house.

6.3 To Determine the Relationship between Housing Speculation and Housing Price in Klang Valley, Malaysia

There is a positive relationship between housing speculation and housing price. According to Mohammad (2010) the more the speculation of the product, the market more active and attract more investor to invest on the product. Thus this will lead to an increase on demand. According to Towbin (2014) there is a relationship between house price and speculation in financial market and speculation is injurious to public because it improves price fluctuations in the market.

6.4 To Determine the Relationship between Inflation Rate and Housing Price in Klang Valley, Malaysia

This study shows inflation rate is not influence the housing price. The result is different from Ong (2013) which saying inflation will load real payment on the long-term fixed-rate mortgage, increasing of money supply lead to inflation and reduce in money value and lead to increasing of housing price. This supported by Anari (2002) by saying that inflation rate have a relation between house price, rent, and also consumer price index. Although in this study, inflation rate had been rejected due to some reason, but there are seen to have relationship in other studies.

7. Conclusion

Results showed that population, construction costs and housing speculation are influence the housing price in Malaysia. Therefore, efforts to increase the affordability should be continued by the Government of Malaysian, policy maker, developer and other related parties in order to the youngest able to buy a house. The effort would further upgrade and maintain the affordability as well as assist in achieving the dream to own a house in Malaysia.

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Internationalization of Chinese Born Global Companies: An analysis from Entrepreneurial Perspective

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Abstract

Faced with world economy development and global market integration, the concept of born global comes into being in the late 1980s and have raised great amount of scholars' research interests and enthusiasm. Based on established born global research outcomes derived from developed nations, the paper explores the contributing factors of Chinese born global companies' formation by centering on elements of entrepreneurship, niche market, international management background and networks research. In addition, the paper conducts an in-depth analysis of this distinct phenomenon through entrepreneur's capabilities perspective. The research outcome indicates that entrepreneur's capabilities including learning ability and networking ability have direct and positive impact on Chinese born global companies' international activities. Besides, firm founders' entrepreneurial orientation also plays the moderating role within that influence mechanism.

Keywords: born global, internationalization, entrepreneur's capability, entrepreneurial orientation

1. Introduction

In past three decades, a newly and distinct phenomenon emerged from international business research domain, plenty of small and medium sized enterprises actively pursued international opportunities at the beginning of firms' inception, undertook global business activities very rapidly, those companies were termed as born global or international new venture in academic research field. However, it seems traditional international business theories are less applicable in explaining those new established companies' rapid internationalization phenomenon, which has attracted scholar's great attention and interests. Building on previous research outcomes toward born global companies, the paper tries to explore driving factors of Chinese born global companies according to case study from Zhejiang province which is an eastern costal province in China featured with thriving small and medium enterprises and export oriented economies. In addition, the paper also analyzes the relationship between entrepreneur's capabilities including learning ability as well as networking ability and international expansion activities by adding entrepreneurial orientation elements into the influencing mechanism.

2. Literature about the Emergence of Born Global Company

Traditionally, two approaches to examine the process by which small and medium firms internationalize are: the Uppsala internationalization Model (Johanson and Vahlne, 1977) and Innovation-Related internationalization Models (Cavusgil, Naidu, 1993). Common to both models is that they consist of a number of identifiable and distinct stages with higher level stages indicating greater involvement in a foreign market. The distinctive feature of the Uppsala internationalization model is the emphasis on the different institutional forms that are associated with the growing dependence on foreign markets. This model examines internationalization in terms of structural adjustments to foreign market servicing arrangements resulting from the level of export sales dependence. The Uppsala model seeks to explain and predict two aspects of internationalization of the firm: (1) the step by step pattern of institutional development within individual national markets; and (2) the expansion of firms across national markets as they move from nations which are proximal to those which are increasingly psychically distant. The Innovation-Related Internationalization Models (I-Models) offer another view on incremental development. The models consider the decision to internationalize as an innovation for the firm. Both theories focus is exclusively on the export development process, in particular, of small and medium sized firms, they

identify three incremental stages: the pre-export stage; the initial export stage; the advanced stage.

Until the 1990s, the common view within research has been that SMEs' size limitations and newness constrain their possibilities for expanding their operations abroad. Compared with large firms, these small have limited financial, managerial and information resources as well as limited network and are thought to internationalize in a slow process in which they increase their resource commitments to foreign markets in gradual steps (Bilkey and Tesar, 1977). Moreover, an implicit assumption is that a firm starts to develop its business in domestic markets before operating abroad. During the 1990s, studies start to present a different view of SMEs' internationalization showing that some SMEs began operating abroad from inception or soon thereafter. These firms often have limited experience operating in domestic markets prior to the start of foreign market operations. Compared with the conventional view, these firms demonstrate a more rapid internationalization with rapid resource commitments to foreign market operations. Size and resource limitations are not shown to be a constraint for their internationalization and these SMEs are often started by individuals who have international experience from prior employment and a personal network of relationships, which is useful for the initial internationalization of the firm (Madsen and Servais, 1997). To distinguish these SMEs, they are given labels such as born global (Knight and Cavusgil, 1996), global start-ups (Oviatt and McDougall, 1994) and international new ventures (INVs) (Oviatt and McDougall, 1994). Several studies examining the internationalization of SMEs during the last two decades have argued that born global phenomenon represent a distinctive pattern of the internationalization process (Bell et al., 2003) and traditional international business theories may not be applicable to these types of firms (Zhou, et al., 2014) and more specifically oriented and high systematic investigation is needed to understand this phenomenon.

In 1994, Oviatt and McDougall published their milestone paper named *toward theories of international new ventures*, that paper are widely cited by researchers in the field, they defined born-global firms as "a business organization that, from inception, seeks to derive significant competitive advantage from the use of resources and the sale of outputs in multiple countries" (Oviatt & McDougall, 1994). In the paper, the authors also divide those firms into export/import start-up, multinational trader, geographically focused start-up, and global start-up types. Then Knight and Madsen & Servais reckoned that born global firm as "firms less than 20 years old that internationalized on average within three years of founding and generate at least 25 percent of total sales from abroad." (Knight, Madsen & Servais, 2004) Loustarinen & Gabrielsson (2006) defined global ventures as the firms that "have usually first started to internationalize their operations and, on top of that, have entered global markets, deriving most of their income (over 50%) from non-domestic continents." (Luostarinen & Gabrielsson, 2006)

The paper selects Zhejiang province as case study due to its thriving private economy and great number of small and medium enterprises, most of them are still engaged in traditional industries, some of them are in Hi-tech industries. In Zhejiang's SMEs development process, most of enterprises seem follow ways as internationalization process theory indicated, that is gradually entering into foreign market by stages after getting a firm ground in domestic market. While at the same time, some SMEs in Zhejiang province undertake international activities very rapidly at the beginning of firms' establishment or just very shortly after firms' foundation. Several Chinese scholars have explored distinctive features of Chinese born global companies (Zhong Yang et al., 2007), from the overall point of view, research about born global companies in China is still in infancy stage.

3. The Driving Factors of Born Global Companies in Zhejiang Province, China

In seminal work of international entrepreneurship, McDougall (1994) indicated that traditional monopoly advantage theory, product life cycle theory, international stage theory and internalization theories are not able to fully explain the phenomenon of born global. That's why scholars have continuously put great efforts into exploring that distinct research theme which is at the intercross of international business and entrepreneurship domain. According to extant research outcomes, the reasons for explaining born global phenomenon can be classified into two levels: one is macro-level, the other is micro-level (Bell, etc al., 2003). The macro-level research boils the emergence of born global company down into the changes of external macro environment, while the micro-level research sticks to micro individual enterprise exploration, viewing the phenomenon of born global company is enabled by some factors related to individual enterprise. Madsen, Servais (1997) contributed born global company into three factors: emerging market demands; advances in production, transportation and communication technology development; more specialized talents. Rialp-Criao and Knight (2005a) undertook a systematic research about the most representative literature about born global companies, they reached a conclusion about driving factors of born global companies by summarizing 27 papers in 15 journals: emerging market, technology development, global network and alliance, more capable entrepreneur, all those factors are

closely related to born global companies' emergence and growth.

McDougall, Shane and Oviatt tried to explain the formation of born global companies through three levels. The first level is about the main factors of globalization, which indicate that born global company founders are highly sensitive to external information and market opportunities. They are usually educated in foreign countries or once worked in foreign MNCs, during that overseas studying or working process, they have developed some connections with foreign customers and obtained certain international experiences. The second level delves into why born global company initiate international market first rather than domestic market, they explained born global company's early internationalization by using resource based theory (RBV), they take advantage of resources accessed from multi-countries in the world to overcome their liability of smallness and newness (Autio, 2000). The third level is about the governance born global company adopted, they tend to rely on flexible governance method to access resources controlled by others rather than owning them through huge investment by themselves. Chinese scholar Zhong Yang et al., (2007) suggested that entrepreneurship, organizational learning and business network are vital driving factors of born global companies, Zhongwei Cheng (2008) empirically tested the relationship between born global founders' entrepreneurship and company performance. Youzheng Zhao (2004) indicated that economic globalization, niche market, technology advancement and small company's flexibility are all important driving factors of Chinese born global companies based on large samples test of companies in Yangtze River delta in eastern China.

Different from born global companies featured with cutting edge technology in Hi-tech and knowledge intensive industries in developed countries (Baum, M et al., 2013), born global companies in Zhejiang province are mainly engaged in labor-intensive or other traditional industries. According to their particularities, the paper analyzes Zhejiang born global companies' driving factors by centering on unique entrepreneurship of Zhejiang businessman; accurate niche market positioning; previous international management background and business network of Zhejiang enterprise that span across the globe.

3.1 Unique Entrepreneurial Spirit in Zhejiang

Zhejiang has always been a shortage of resources due to its geographical location, however, since the reform and opening up policy in 1978, Zhejiang's economic development has kept ahead of the whole country due to its prosperous private economy growth and numerous thriving small and medium enterprises. In Zhejiang's SMEs development process, so called "unique Zhejiang entrepreneurial spirit" has played very crucial role in enhancing entrepreneurial dynamism and encouraging more people to set up their own business. In Zhejiang enterprises' development practice through past three decades, they gradually formed a diligent and pragmatic spirit of entrepreneurship, the courage to open up under the spirit of innovation; explore and exploit market opportunities under the spirit of reform; live up to promise under spirit of keeping faith and non-stop conduct self-error correction under the spirit of tolerance. Entrepreneurship and innovation are always two engines for Zhejiang small and medium enterprises' development, Zhejiang has successfully transformed itself from a resource-constrained small province into a formidable economic power among China's 23 provinces, the underlying reason lies in generation by generation, non-stop entrepreneurial and innovation spirit. Good at capturing market opportunities and always considering reforms are distinctive features and competitive advantages of Zhejiang born global companies. Entrepreneurs of Zhejiang have excellent judgment ability, an indomitable will and aggressive courage. They are not resting on laurels, not satisfied with what they have achieved and what they have done in market development, product innovation or international management, they continuously conduct institution innovation and organization innovation, that's why unique entrepreneurial spirit in Zhejiang drives the emergence of local born global companies.

3.2 Accurate Niche Market

Most of Zhejiang companies are small and medium enterprises, due to their size constraints, they can not compete with giant rivals in large market segment and wide range of product offerings. In order to avoid intense competition against formidable big rivals in overseas market, Zhejiang born global companies choose small potential market segment which is neglected by big companies. In China's domestic market, some Zhejiang SMEs adopt focusing strategy, they choose to operate in something look small market segment such as button, socks, etc. although those niche markets seem small, they have great potential to make profits. What's more, industry clusters and specialized market are the most striking features of Zhejiang economy, individual born global company is more difficult to get succeed in overseas market due to limited technology, production capability and marketing activities. That's why small companies in Zhejiang tend to unite together to form some industry clusters to help each other and realize win-win effects. Based on the platform of cluster, born global companies establish supply-demand chains to realize self-asset value increment through creating value for

customers. In Zhejiang born global companies' global strategy, most of them regard small business segment as their international business starting point, supported by powerful cluster and specialized market, those born global companies concentrate resources and strength to enter international markets, they just focus on their selected niche market, stick to what they are good at, never expand into larger range of product offering which they can not command. Thanks to niche market strategy and positioning, Zhejiang SMEs can realize their foreign sales very rapidly at the beginning of company foundation or just very shortly after inception and become born global companies.

3.3 Previous International Management Background

Generally speaking, there are two models for Zhejiang entrepreneurs to set up born global companies. One model is that Zhejiang born global founders were separated from big companies or MNCs they once worked, the other model is that founders with international experience background set up the company from scratch. In the first model, founders who once worked in big companies, foreign companies or some multinational companies for many years, they have accumulated knowledge about the industry, market segment and customers' needs, they have also commanded some international awareness and management experience when they contact with overseas partners and customers. In the second model, more and more Chinese people who are educated or lived in foreign countries choose to return their homeland to set up their own companies, since they have studied in foreign countries for many years, some of them successfully find a job in some well-known foreign companies after graduation, they have gained very good international orientation, communication skills, language ability and business contacts with foreign suppliers and buyers in their overseas education & working process. Besides, governments at all levels in Zhejiang are overwhelmingly enthusiastic to attract more talents with international background return their homeland to set up companies, they have also released a series of policies to support and encourage overseas returnee entrepreneurial activities including taxes reduction, free land & office rental, fundraising support, etc. Therefore, founders with previous international experiences are key driving factors for Zhejiang born global companies' emergence.

3.4 Well-organized Business Networks of Zhejiang Companies

One distinctive feature of Zhejiang companies is that each individual firm is involved in wide scope of business networks which are established on entrepreneur's personal networks including ties of blood, ties of relatives, ties of the same studying experience and ties of living in the same place. That wide scope of networks offer Zhejiang companies a great amount of resources which are very helpful to overcome the problem of small companies' resources constraint. When Zhejiang's born global company enter into one certain foreign country, ties of relatives and ties of once living in the same place have played irreplaceable role to help the born global company to connect with foreign distributors and customers. For instance, some lighter producers in Wenzhou city, Zhejiang province enter into international markets through intermediary network of partners in Hang Kong. Companies in apparel industry, small merchandize industry and toys industry all take advantage of their countrymen networks to expand international market and get succeed. In order to lower risks of operating in foreign markets, one powerful or several established Zhejiang companies have played the leading role to set up development zone or industrial park in foreign country, and attract more small and medium enterprises in Zhejiang to run their subsidiaries in the industrial park. For example, Meiyue corporation derived from Zhuji city in Zhejiang province established textile industry park in Nigeria, and attracted companies of its whole value chain including spinning, weaving, embroidering, knitting and whole garment manufacturing producers to set up subsidiaries in the industrial park, till now, Zhejiang province has successfully established 4 national-level overseas economic and trade cooperation zones. In Zhejiang companies' networking activities, they not only take advantage of existing networks but also make every effort to explore new business networks, ceaselessly improve company's global network layout. For example, a well-known apparel firm named Younger has not only obtained 14 manufacturing plants in Sri Lanka and Philippine but also has gained more than 20 well-known brands ODM processing business through merger and acquisition activities, what's more, Younger now has owned 5 licensing brands including Nautica and PerryEllis. M&A activities enabled Younger to get distribution channels and logistic system, which expand Younger's business network to a great extent. Ningbo Haitian Machinery Company has set up cross-border processing trading subsidiaries in Turkey, Canada and Mexico with the help of its business networks. Till now, Zhejiang born global companies overseas investment mode has upgraded from initial trading subsidiary foundation in distribution channel into higher commitment modes such as overseas manufacturing plant and R&D centers establishment.

4. Two Prominent Research Perspectives of Born Global Companies

4.1 Born Global Research Based on Network Perspective

Network approach analyzes firm's activities under the environment of inter-organization and inter-personal networks (Sharma, Blomstermo, 2003), scholars examine born global companies based on resources acquisition, network development, organizational learning and social networks. RBV perspective views that except from organization's own resources, firms have the possibilities to access more external resources in virtue of social capital domestic and abroad, which will enable firms to enter into international market and compete with foreign rivals more rapidly. While network perspective's major concern is how social capital domestic and abroad is formed and influence firms' international activities; organizational learning perspective mainly states that how firm use network to acquire, assimilate and utilize knowledge to maintain knowledge renewing and competitive advantage, constantly expand into international market in dynamic environment (Gassmann, Keupp, 2007). Social network perspective emphasizes that different position enterprise holds in the network, it will have different influences of network embeddedness on firms' external resources acquisition (Ripolle, Blesa, 2012).

As a matter of fact, all those theories and perspectives are closely related to each other. Whether experience, knowledge or information acquired from networks, they are necessary resources for enterprises, therefore, resource-based view seems always the theoretic foundation of explaining the relationship between network and born global companies. Newly established small company can get access to external resources, which are complementing its organization internal resources constraints. By that way, small and young companies are able to expand into international market rapidly. Since knowledge and experience need time to accumulate, network development and trust building are naturally the outcomes of long-term efforts (Cohen WM, 1990). Network extension from domestic to abroad, experiences accumulated and trust gained, knowledge assimilation and key position's building in the network are all gradually developed. Therefore, all those research can not fully explain two essential questions of accelerated internationalization phenomenon: 1. why does born global company target international market since inception? Why can born global company accumulate substantial knowledge to skip domestic entrepreneurial stage to rapidly engage in international market? 2. Why can born global company build up cooperative networks and relationships, share trust and knowledge, expand into psychical distant countries?

4.2 Born Global Research Based on Entrepreneurship Perspective

In order to deepen the research on born global companies, McDougall and other scholars advocate repositioning of entrepreneurship research, adjusting focus on enterprise to entrepreneur, which arouse more scholars' attention on international entrepreneurship (McDougall, 2003). Although the scope of international entrepreneurship research has made breakthrough in size and time foundation limit, any innovative behavior that bring value and creation and firm growth related to cross-border activities can be considered as international entrepreneurship, born global phenomenon is still the research focus in the domain. Scholars investigate various factors about individual level, firm level, industry level and national level's influences on international entrepreneurship, entrepreneur's international orientation, entrepreneur's global mindset, risk-taking attitude and competition activeness have determined early internationalized companies' strategy choices and promoted the emergence and development of born global companies. However, previous research has placed more emphasis on "how" issues, and is still not adequate on "why" issues, that means the question about why companies skip psychical distance and internationalize early needs to be further explored. Entrepreneurial orientation has provided explanation of willingness to set up born global company, but neglect the role of capability. Thus, extant research has not provided very convincing explanation about born global company's accelerated internationalization.

4.3 Research about Capability of Entrepreneurs

In born global research, some scholars put forward the role of entrepreneurs' capabilities, includes entrepreneur's management skills, industry skill, ability to raise finance, etc. However, extant research has not done enough research on the relationship between entrepreneur capabilities and born global international activities (Weerawardena, et al., 2007). The research indicate that entrepreneur's capability has important influence on company's competitive advantages, strategic behavior and performance. The reason of born global company's early internationalization and skipping stages of traditional international process is related to its learning advantages of newness which relies on entrepreneur's distinctive capability (Aspelund et al., 2007). Thus, it will be insightful to offer more comprehensive explanation to exceptional internationalization behavior of born global companies. according to different roles and functions of entrepreneurs, scholars classify entrepreneur's capability into several types, includes: networking ability, learning ability, strategic ability, management ability, relationship ability, opportunity ability, innovation ability, resource allocation ability, resource integration ability and institutional ability, etc. Among those capabilities, entrepreneur's learning capability to seek, assimilate and

exploit knowledge and entrepreneur's networking capability to build up network and manage to acquire information and resources are crucial factors to advance early internationalization (Zahra, et al., 2000). In addition, the role of entrepreneurial orientation can not be neglected, which represent entrepreneur's subjective perception, since besides entrepreneur's capability, subjective factors do have impacts on firms' strategic behaviors. In the latter part, the paper mainly investigate entrepreneur's learning capability and networking capability as well as entrepreneurial orientation's influence on born global company's international activities based on entrepreneur's capability research perspective.

5. Factors' Influence on International Activities of Chinese Born Global Companies Based on Entrepreneur's Capability Perspective

5.1 Entrepreneur Capability's Influence on International Activities of Chinese Born Global Companies

5.1.1 Dimensions of Entrepreneur Capabilities

There are two prominent entrepreneur capabilities that influence international activities of Chinese born global companies: one is learning capability to assimilate and utilize related knowledge; the other is networking capability to access related information and resources (Mort, Weerawardena, 2006). The research on learning methods is concentrating upon exploitive learning and explorative learning. Exploitive learning is the utilization of existing knowledge to make extant knowledge work at full capacity; while explorative learning is the exploration of new, possible knowledge to create whole new knowledge. In entrepreneur's learning capabilities, it includes both exploitative learning as well as explorative learning, Chinese born global company's entrepreneur needs fully taking advantage of personal and organizational existing knowledge and other resources to reduce internationalization cost on one hand, they need to constantly innovate in management, technology and other aspects to adapt to international competitive environment on the other hand. Networking capability or relationship capability is the ability to establish, maintain and develop relationship with business partners. Johanson and Vahlne have classified this capability into three types: 1. the ability of building up new networks, means entrepreneur use the skill obtained in one network in building up new networks, such as how to connect with new partners, what steps take to develop those relationship rapidly; 2. Ability of maintaining relationship, means that deepen the relationship with existing partners, get to know about partners' strategic goal, management capacity, organization and behavior characteristics, try to build up trust with partners in order to better share knowledge and cooperate. 3. Ability of coordination, it means the firm coordinates activities of different relations, connect different network relationship organically in order to conduct various activities more effectively and more rapidly in the value chain (Johanson, Vahlne, 2009).

5.1.2 The Influence of Entrepreneur's Capabilities

First of all, entrepreneur's learning capability influence Chinese born global company's international activities, the emergence of born global company is resulted from its distinctive learning advantages. While among small firms' learning capabilities, entrepreneur's learning capability certainly facilitate the firms to get growth opportunities in its early internationalization, thus, entrepreneur's learning capability including exploitation of existing knowledge and exploration of new knowledge will inevitably impact the speed of internationalization. Previous research deems internationalization is a process of continuous knowledge accumulation and firm's internationalization is always preceded incrementally (Keupp, Gassmann, 2009). If the entrepreneur has strong learning capability, he or she can seek international market information and new knowledge proactively, and transform knowledge into products that meet international market demands by combining existing knowledge and experiences. Entrepreneur's learning capability can strengthen organization's assimilating ability, Cohen, Levinthal (1990) defined assimilating capability as recognizing new information's value, assimilating and translating it into business purposes. The process of born global company's rapid internationalization is substantially applying international market's new technology and knowledge into speedy commercialization; therefore, assimilating ability is always the crucial factor. For Chinese born global companies, entrepreneur's learning capability enables them to utilize its industry experience and knowledge to constantly acquire new knowledge in product internationalization, and internalize the acquired knowledge into the organization. Entrepreneur's learning capability not only fasten technological commercialization, shorten the time elapse between the firm's foundation and internationalization, but also better adapt the firm to foreign social and economic environment and organizational operating system, overcome psychical distance and accelerate internationalization pace.

Proposition 1: entrepreneur's learning capability can advance Chinese born global company's vertical and horizontal international activities, accelerate their internationalization pace.

Entrepreneur's networking capability also facilitates born global company's accelerated internationalization (Jantune, 2008). Learning capability enable Chinese born global company to acquire and utilize knowledge rapidly, while knowledge does not exist in vacuum, network is the best medium of knowledge and information transmission. For Chinese born global companies, networks are particularly important, the firm uses network's position structure, intimate relationship and acquired cognition to elaborate social capital's function of information transmission, cooperation to promote international expansion (Coombs etc., 2009). If born global company build up networks rapidly, it will be earlier for them to access knowledge which is needed for internationalization. By that means, the born global company can use learning capability to internationalize more rapidly. The essential for networks speed is also dependent upon entrepreneur's networking capability, which means more powerful entrepreneur's networking capability, would born global companies more rapidly build up networks, connect with new partners, develop and maintain new relationship, deepen understanding, form trust, share knowledge and information. Meanwhile, the networking capability would be very helpful to coordinate multi-relationships, including existing relationship and new relationship; supplier relationship and customer relationship (De Clercq etc al., 2012), then to form effective collaborative networks. The networking capability of building up, maintaining, coordinating international network influence born global company's accelerated international activities from two aspects. Firstly, rapid network expansion enables Chinese companies to get in touch with target market promptly, discover and grasp potential opportunities in international market, and then exploit the international opportunity through network resources coordination to internationalize rapidly. Secondly, network and trusted relationship's rapid building up will help Chinese born global companies to strengthen their cooperation with network partners, deepen their understanding about overseas market, launch more appropriate products to meet foreign customers' demand and overcome psychical distance. Certain market experience is needed to overcome cultural difference and understand local demands, those experiences include product technology knowledge and customer service knowledge, those experiences' acquisition need time to gradually accumulate or inject large amount of financial and human resources to undertake necessary market research (Freeman et al., 2006) and entrepreneurs who have strong networking capability will rapidly acquire market experience which can not be obtained through systematic market research, and overcome time, resource and psychical distance constraints.

Proposition 2: entrepreneur's networking capability advances Chinese born global company's vertical and horizontal international activities and accelerate their internationalization pace.

5.2 The Moderating Role of Entrepreneurial Orientation

Entrepreneur's perception is a very important contingent factor to determine capability influence's direction and extent. Entrepreneur's vigor and SME's resources are very limited, not all SMEs invest their valuable time, energy and resources into firms' international activities (Kuivalainen, etc al., 2007). In Chinese born global phenomenon, why do some entrepreneurs bring learning capability into play, promote key technology and knowledge into commercialization in foreign market rather than dig deep into domestic market and increase domestic sales? Why do born global company's entrepreneurs utilize their networking capability, overcome cultural differences to strengthen and coordinate cross-border networks, rather than evolve naturally with network, incrementally expand from domestic market to overseas market, from psychical close market to psychical distant market? The answer to the question lies in how entrepreneurs view their internationalization strategies, how to evaluate earning and risks of internationalization. Therefore, above analysis is based on the precondition that at the beginning of born global company's foundation, entrepreneurs have global vision and clear internationalization goals. Under that circumstance, entrepreneur's learning capability and networking capability tend to develop towards the direction of accelerated internationalization.

In the research of entrepreneur capability's influence on born global company's accelerated internationalization, entrepreneurial orientation is more suitable to describe the characteristics of entrepreneur's perception comparing with traditional entrepreneurs' demographic features (Cavusgil, Knight, 2015). There are three dimensions of entrepreneurial orientation: proactive ness, risk-taking and competitive initiatives, which are closely related with intense competition in international market. Proactive ness is helpful to discover opportunity and ensure firms' correct direction. Only entrepreneurs discover overseas market in time, would they clearly know about which technology and market knowledge need to be commanded, use networking capability to build up relationship with key customers and suppliers, interact positively, coordinate resources. At the same time, international market operation's uncertainty can be apperceived by entrepreneurs who have keen insight beforehand, and then calmly estimate how to exchange information with organizations which are familiar with local special market environment, then greatly increase the likelihood of success (Nummela, etc al., 2014). Risk-taking is conducive to timely decision-making, only entrepreneurs dare to take risks, would they put international market learning

and building up networks motives into action. International market risks are factors must be seriously considered, especially to Chinese born global companies. Relying on very limited resources to enter into international market would incur formidable risks due to immature market (Oviatt, McDougall, 2005). Only entrepreneurs with higher risk-taking orientation can make bold decisions and enable firms to internationalize early (Zhou, L & Wu, A., 2014).

Entrepreneurs with active competitive initiatives would not shirk from but try their best to compete with rivals. There are three stages in the process of new venture's internationalization: discover new opportunities, configure resources to exploit opportunities and compete with rivals. Entrepreneurs with proactive ness and risk-taking features, they can successfully stride over the first two stages relying on learning capability and networking capability. International market opportunities are vulnerable to lose, if the firm does not grasp the opportunity timely, it will fall into rivals' hands (Chandra, Wilkinson, 2012). Entrepreneur's competitive spirit enables them to respond quickly and take actions to defeat rivals and expand into international markets more rapidly.

Proposition 3: the stronger of entrepreneurial orientation, the more likelihood of learning capability and networking capability advance Chinese born global company's vertical and horizontal international activities.

To sum up above analysis and propositions, the paper put forward research model shown in figure 1. As the figure indicates that entrepreneur's learning capability and networking capability have direct effects on Chinese born global companies' international activities, and the direct influence mechanism are moderated by effects of entrepreneurial orientation.

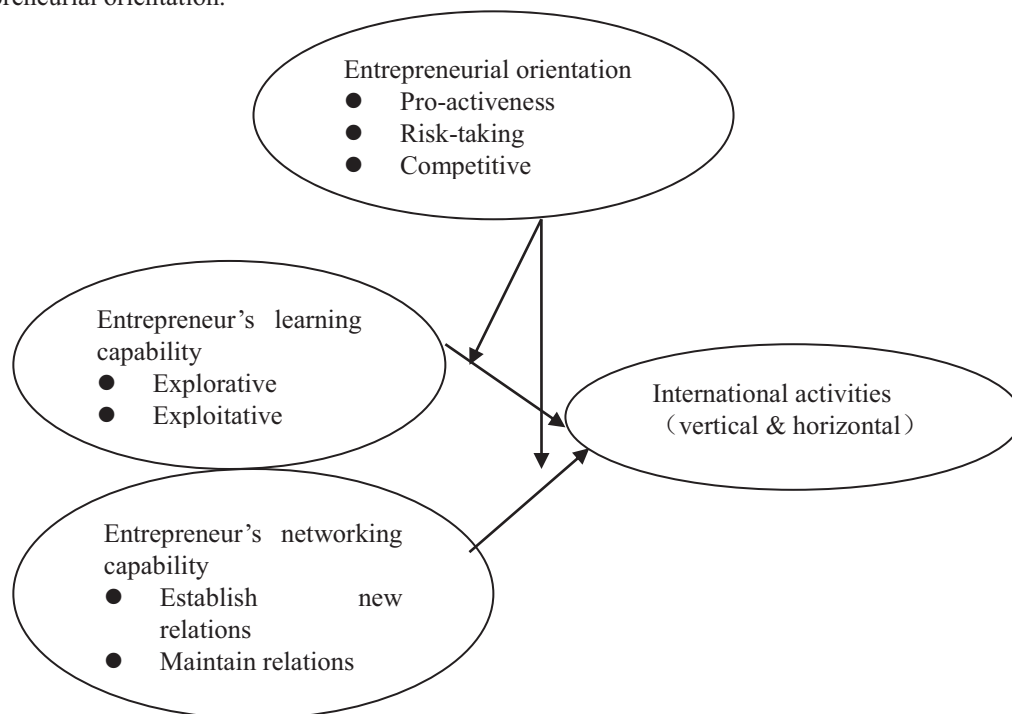


Figure 1. Entrepreneur's capability, entrepreneurial orientation's influence mechanism on Chinese born global companies' international activities

6. Conclusion

Although born global phenomenon has attracted great attention of scholars, and analysis has been conducted through multi-perspectives and levels, some limitation still exist. Extant research domestic and abroad indicate that accelerated international activities are the most distinctive characteristics of born global companies, traditional international theories can not fully explain the phenomenon of born global company, network perspective and entrepreneurship theory of born global research also not provide convincing answers, thus, entrepreneur capability perspective is a worthwhile research direction. The paper views: firstly, entrepreneur's learning capability includes explorative and exploitive learning capabilities, they speed up knowledge seeking, assimilating and exploiting process, advance born global companies' vertical and horizontal international

activities. Secondly, entrepreneur's networking capability includes build up, maintain and coordinate the networks, it builds up information and resources acquisition channels, exert important influence on accelerated international activities. Finally, entrepreneurial orientation composed of proactive ness, risk-taking and competitive initiative play moderating role within above influence mechanism.

The paper also has some limitations. First, the paper stresses the important roles of entrepreneur's learning capability and networking capability based on entrepreneur's research perspective, however, the paper hasn't examined whether there exist influence difference between vertical international activities and horizontal international activities, although relationship between them complementary or substitute has been mentioned, more detailed analysis is still needed, thus, research about those issues is demanded in the future. Besides, the paper is still constrained in literature review, theoretical analysis and logic deduction, the research outcomes need to be further examined by scientific method and empirical data, that is also the future research direction.

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A Comparison of Jordanian Bankruptcy Models: Multilayer Perceptron Neural Network and Discriminant Analysis

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Abstract

The main purpose of this study is to develop and compare the classification accuracy of bankruptcy prediction models using the multilayer perceptron neural network, and discriminant analysis, for the industrial sector in Jordan. The models were developed using the ten popular financial ratios found to be useful in earlier studies and expected to predict bankruptcy. The study sample was divided into two samples; the original sample (n=14) for developing the two models and a hold-out sample (n=18) for testing the prediction of models for three years prior to bankruptcy during the period from 2000 to 2014.

The results indicated that there was a difference in prediction accuracy between models in two and three years prior to failure. The results indicated that the multilayer perceptron neural network model achieved a higher overall classification accuracy rate for all three years prior to bankruptcy than the discriminant analysis model. Furthermore, the prediction rate was 94.44% two years prior to bankruptcy using multilayer perceptron neural network model and 72.22% using the discriminant analysis model. This is a significant difference of 22.22%. On the other side, the prediction rate of 83.34% three years prior to bankruptcy using multilayer perceptron neural network model and 61.11% using discriminant analysis model. We indicate there was a difference exists of 22.23%. In addition, the multilayer perceptron neural network model provides in the first two years prior to bankruptcy the lowest percentage of type I error.

Keywords: multilayer perceptron neural network (MLPNN), discriminant analysis (DA), bankruptcy, financial ratios, Jordan

1. Introduction

It is now more than 80 years since the first study by Fitzpatrick (1932) on bankruptcy. Researchers use statistical techniques, such as logistic regression, discriminant analysis and neural networks to build prediction models for assessing and predicting bankruptcy (business failure), with a very high accuracy rate reached in many studies. Prediction models that were developed using statistical methods to predict bankruptcy can help companies reduce losses for the internal or external users of the finances, by sending warnings prior to bankruptcy.

Since the late 1980s, researchers in Jordan have been working to build prediction models using statistical techniques for assessing and predicting business failure, such as discriminant analysis or by applying the Altman model.

The main objective of the current study is to build two prediction models with data from the Jordanian Industrial Sector during the period 2000 to 2014 for a total of 32 companies, using the multilayer perceptron neural network (MLPNN) and discriminant analysis (DA) to predict the risk of bankruptcy three years prior to the event and compare the performance of the two models.

This study is organized as follows. The first section provides an introduction and literature review. In section two, we discuss the research hypothesis. Section three describes the research methodology. Section four discusses empirical results, and the final section presents the findings of the study and the conclusion.

2. Literature Review

The first study regarding bankruptcy was undertaken by Fitzpatrick (1932), more than three decades after the Fitzpatrick study, Beaver (1967) used in his study the t-tests to evaluate five prior years to bankruptcy, the

accounting ratios are independent variables of the study. In 1968, Altman applied a new technique known as discriminant analysis and it is recorded as the most common and important study in the field of bankruptcy. The logit regression statistic was undertaken by Ohlson's (1980) for a large sample that did not include the same size of bankrupt and non-bankrupt companies.

Another technique that can be used to predict bankruptcy is known as neural networks and is used by many researchers. Odom and Sharda's (1990) study compared two statistical tools; the neural networks (NN) and the discriminant analysis technique to compare the prediction rate of both techniques. The results show that a neural network (NN) has better prediction rate. A study by Koh and Tan (1999) showed that the neural network model reached 100% classification accuracy for all tested cases.

In Jordan, the first study on bankruptcy was undertaken by Gharaibeh and Yacoub (1987). The researchers developed a model using the discriminant analysis technique, and this study had a 100% accuracy rate. Also, the same results were found by Alomari (2000) and Al-Hroot (2015). Al-Hroot's (2016) study was recorded as the first study in Jordan related to using the neural network (NN). This study developed a model using the neural network (NN) and reached a 100% accuracy rate for one-year pre to bankruptcy. The study of Alkhatib and Al Bzour (2011) applied Altman and Kida models in the Jordanian non-financial service and manufacturing firms during (1990-2006), results of the study show that the prediction rate for Altman model (93.8%) is better than Kida's model prediction rate (69%). also the study of (Gharaibeh et al., 2013) applied the Altman Z-score (1968) and Kida models in Jordan between 2005 and 2012 on a sample included 38 companies in the Jordanian industrial companies, Altman's model shows for three years before bankruptcy prediction rate 89.5%, 65.8% and 52.6% (one, two and three years before bankruptcy) respectively, while Kida's model for three years before bankruptcy prediction rate 76.3%, 52.6%, and 44.7% (one, two and three years prior bankruptcy) respectively. Another study by Alareeni and Branson (2012) applied the Altman models to the service sector in Jordan, the researchers concluded that the Altman Z-score could not give a warning as soon as before bankruptcy and could not differentiate between bankrupt and non-bankrupt companies. They recommended that to obtain high accuracy, another statistical method must be used.

We can conclude that studies inside and outside of Jordan show differing results. While the neural network models and discriminant analysis shows high predictive ability in classification in many studies, researchers in this field reached a high classification rate and a satisfactory result. A neural network model was not applied in earlier studies conducted in Jordan, except in the study of Al-Hroot (2016). In other words, the number of studies that test statistical prediction models that have been done in Jordan are limited, especially the neural network models, when compared with other countries such as the USA or European Union countries.

2.1 Hypotheses Development

To achieve the objective of the study, and after reviewing the related literature, the following hypotheses will be tested:

Hypothesis 1: The MLPNN model will not predict bankruptcy of industrial firms in Jordan for the three years before bankruptcy.

Hypothesis 2: The DA model will not predict bankruptcy of industrial firms in Jordan for the three years before bankruptcy.

3. Research Methodology

This study is to develop and compare the classification accuracy of bankruptcy prediction models using the multilayer perceptron neural network, and discriminant analysis. The study population consisted of companies in the Industry sector in Jordan, over a 14-year period (2000-2014). The sample contains 32 industrial companies in Jordan, Out of 32 industrial companies, 14 are used for estimation sample comprise a similar pair-matched sample of bankrupt and non-bankrupt firms, and 18 are a holdout for model effectiveness comprise a similar pair-matched sample of bankrupt and non-bankrupt firms. Once the sample was selected, the financial ratios can be seen in (Appendix) Table 1; financial ratios includes the ten most popular financial ratios found to be useful in earlier studies and expected to predict financial distress (Jodi, Don and Michael, 2007). Table 1 shows the accounting ratios; calculated accounting ratios are entered then into SPSS to estimate the MPLNN and DA models.

Table 1. List of popular financial ratios in earlier studies

Variable Code	Financial ratios	Number of Studies used the Factor*
X1	Current Ratio	51 studies
X2	Return on Assets	54 studies
X3	Cash/Total Assets	18 studies
X4	Debt Ratio	27 studies
X5	Cash Flows from Operating Activities/Total Liabilities	14 studies
X6	Current Assets to Total Assets Ratio	26 studies
X7	Long -term Debt/Total Assets	8 studies
X8	Margin Before Interest and Tax	9 studies
X9	Sales /Total Assets	32 studies
X10	Working Capital /Total Assets	45 studies

* Jodi, Don and Michael, 2007

3.1 Neural Network and Discriminant Analysis

3.1.1 The Neural Network

Figure 1 shows that the neural network (NN) have three layers; the *input layer* is 10 ratios (from X1 to X10), the number of *hidden layers* is 1, which includes 7 units in this layer using the activation sigmoid function, and the *output layer* is the status of the company (bankrupt or non-bankrupt), We chose the NN to classify bankrupt and non-bankrupt industrial companies on the basis of ten variables.

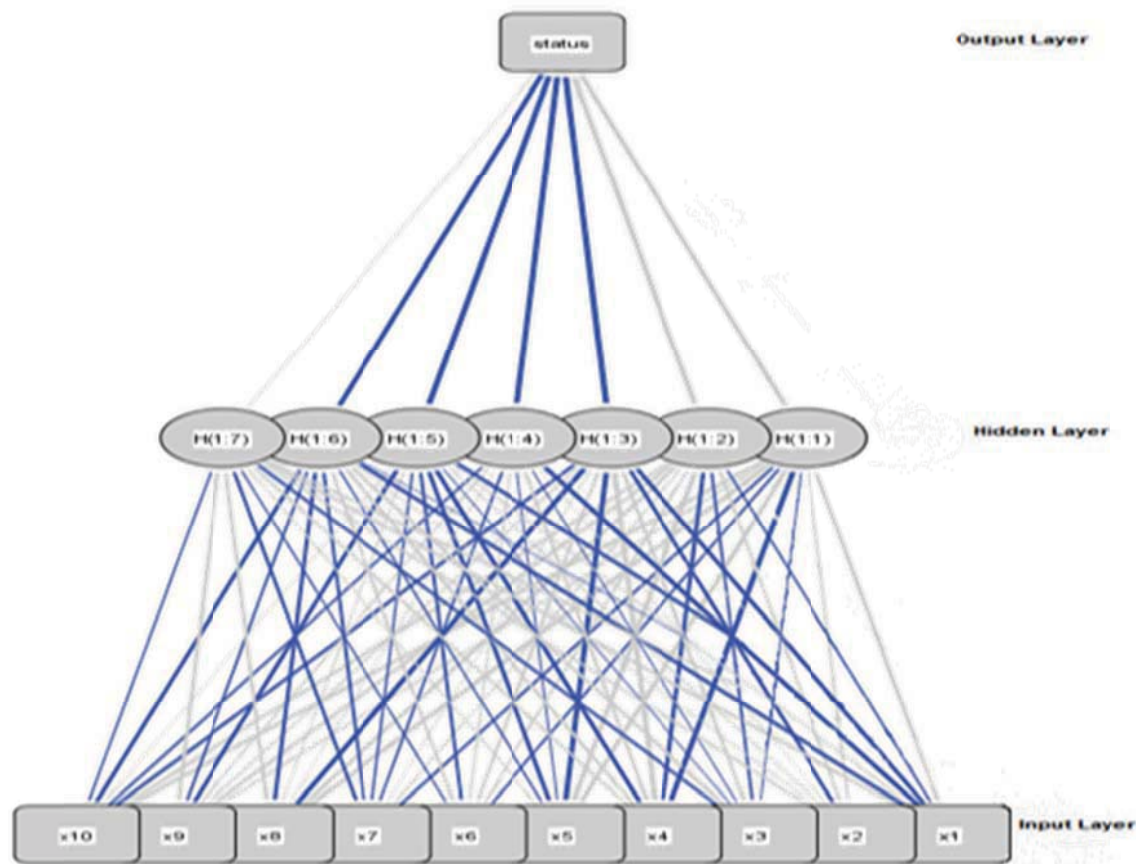


Figure 1. MLPNN model design

Table 2 shows the parameter estimates (also called beta coefficients, or synaptic weights) shows the relationship between the input units in a given layer (X₁, X₂, X₃, X₄, X₅, X₆, X₇, X₈, X₉, X₁₀) and the units in the following layer (Hidden Layer). The values of synaptic weights can become rather high and these values (weights) are not used to interpret neural network results because they are not actual values.

Table 2. The Synaptic weights

	Codes	Input Layer (x)									Output Layer	
		x1	x2	x3	x4	x5	x6	x7	x8	x9	x10	z(j)
Weights to Hidden $h(i,j)$	h(1:1)	1.05	0.26	-0.06	-1.81	1.53	-0.26	-0.38	1.92	0.26	1.47	2.9
	h(1:2)	-0.22	0.34	-0.26	-0.78	1.51	0.26	0.15	1.16	0.95	0.70	3.7
	h(1:3)	-1.27	-0.69	0.50	1.72	-1.65	0.40	0.04	-2.76	0.21	-0.86	-5.1
	h(1:4)	-2.57	0.004	-0.10	0.42	-0.12	0.15	-0.25	0.03	0.21	-0.36	-2.8
	h(1:5)	0.18	0.14	-0.05	-1.26	-0.95	-0.37	-0.20	0.12	-1.11	0.02	-4
	h(1:6)	-1.30	0.11	0.67	0.48	-0.19	0.36	-0.36	-0.63	-0.26	-1.10	-1.9
	h(1:7)	0.96	0.27	-0.52	0.37	0.13	-0.18	-0.42	0.44	0.55	-0.20	0.1

The steps to calculate the prediction score are as follows:

1- Converting input nodes to a hidden node $f(j)$, the equation is given by (Schmidhuber, 2015):

$$f(j) = \sum_{i=1}^{10} x(i) \times h(i,j) \tag{1}$$

$f(j)$: is the hidden node.

$x(i)$: is the input node.

$h(i,j)$: is the weights to hidden.

The values shown in Table 4 are not final and the algorithm cannot use these values because they are not actual values. The results in Table 4 show the application of the above equation shown in number 1.

Table 3. Hidden nodes $f(j)$

Codes	x1	x2	x3	x4	x5	x6	x7	x8	x9	x10	$\sum f(j)$
$f(1)$	$x1 \times 1.05$	$x2 \times 0.26$	$x3 \times -0.06$	$x4 \times -1.81$	$x5 \times 1.53$	$x6 \times -0.26$	$x7 \times -0.38$	$x8 \times 1.92$	$x9 \times 0.26$	$x10 \times 1.47$	$\sum f(1)$
$f(2)$	$x1 \times -0.22$	$x2 \times 0.34$	$x3 \times -0.26$	$x4 \times -0.78$	$x5 \times 1.51$	$x6 \times 0.26$	$x7 \times 0.15$	$x8 \times 1.16$	$x9 \times 0.95$	$x10 \times 0.70$	$\sum f(2)$
$f(3)$	$x1 \times -1.27$	$x2 \times -0.69$	$x3 \times 0.50$	$x4 \times 1.72$	$x5 \times -1.65$	$x6 \times 0.40$	$x7 \times 0.04$	$x8 \times -2.76$	$x9 \times 0.21$	$x10 \times -0.86$	$\sum f(3)$
$f(4)$	$x1 \times -2.57$	$x2 \times 0.004$	$x3 \times -0.10$	$x4 \times 0.42$	$x5 \times -0.12$	$x6 \times 0.15$	$x7 \times -0.25$	$x8 \times 0.03$	$x9 \times 0.21$	$x10 \times -0.36$	$\sum f(4)$
$f(5)$	$x1 \times 0.18$	$x2 \times 0.14$	$x3 \times -0.05$	$x4 \times -1.26$	$x5 \times -0.95$	$x6 \times -0.37$	$x7 \times -0.20$	$x8 \times 0.12$	$x9 \times -1.11$	$x10 \times 0.02$	$\sum f(5)$
$f(6)$	$x1 \times -1.30$	$x2 \times 0.11$	$x3 \times 0.67$	$x4 \times 0.48$	$x5 \times -0.19$	$x6 \times 0.36$	$x7 \times -0.36$	$x8 \times -0.63$	$x9 \times -0.26$	$x10 \times -1.10$	$\sum f(6)$
$f(7)$	$x1 \times 0.96$	$x2 \times 0.27$	$x3 \times -0.52$	$x4 \times 0.37$	$x5 \times 0.13$	$x6 \times -0.18$	$x7 \times -0.42$	$x8 \times 0.44$	$x9 \times 0.55$	$x10 \times -0.20$	$\sum f(7)$

2-Converting the values to actual values:

The values in Table 4 must be converted to threshold values (theta) to be actual values. The theta values fall between 0 and 1 (Gosavi, 2015), using the sigmoid function which refers to the logistic function to convert

3- Calculating the weights on the link from the hidden node to the output node

Table 4 shows the equations for weights on the link from hidden nodes $\sum f(j)$ to the continuous output $v(j)$; the $v(j)$ is the weights on the link from the hidden node to the output node $o(j)$. The results in Table 4 show the application of the below equation number 2.

$$v(i) = \frac{1}{1+e^{-f(i)}} \tag{2}$$

Table 4. Converting hidden node $\sum f(j)$

$\sum f(j)$	$v(j)$
$\sum f(1)$	$1/(1+e^{-f(1)})$
$\sum f(2)$	$1/(1+e^{-f(2)})$
$\sum f(3)$	$1/(1+e^{-f(3)})$
$\sum f(4)$	$1/(1+e^{-f(4)})$
$\sum f(5)$	$1/(1+e^{-f(5)})$
$\sum f(6)$	$1/(1+e^{-f(6)})$
$\sum f(7)$	$1/(1+e^{-f(7)})$

$$o(j) = \sum_{i=1}^{10} v(i) \times z(i,j) \tag{3}$$

Table 5 shows the results of the application of the equation number 3.

Table 5. The output nodes o (j) calculation

v(j)	z (j)	o (j)
$1/(1+e^{-f(1)})$	2.9	$v(1) \times z(1)$
$1/(1+e^{-f(2)})$	3.7	$v(2) \times z(2)$
$1/(1+e^{-f(3)})$	-5.1	$v(3) \times z(3)$
$1/(1+e^{-f(4)})$	-2.8	$v(4) \times z(4)$
$1/(1+e^{-f(5)})$	-4	$v(5) \times z(5)$
$1/(1+e^{-f(6)})$	-1.9	$v(6) \times z(6)$
$1/(1+e^{-f(7)})$	0.1	$v(7) \times z(7)$
Total ($\sum_{i=1}^{10} v(i) \times z(i, j)$)		Value ¹

Finally, we have to convert the value of o(j) similar to the prediction score as a calculation in step 2. The equation is given by (Schmidhuber, 2015):

$$Prediction\ score(p\ score) = \frac{1}{1 + e^{-o(i)}} \tag{4}$$

3.2 Discriminant Analysis (DA)

Discriminant Analysis (DA) is a statistical technique (discrete prediction), and this technique usually used when the dependent variable has two or more than three categories, in this study the dependent variable (bankrupt or non-bankrupt) is predicted on the basis of two or more independent variables (financial ratios), the financial ratios are interval numerical variables in DA. The final equation of DA is:

$$DA\ score = M_1 X_1 + M_2 X_2 + M_3 X_3 \dots M_i X_i + a$$

Where DA is the discriminate function or score

M = the discriminant coefficient or weight for that variable

X = the independent variables (e.g., financial ratios)

a = a constant

i = the number of predictor variables

$$DA\ score = 0.25X_1 + 3.92X_2 - 8.9X_3 + 9.94X_4 - 7.46X_5 - 8.6X_6 + 0.8X_7 + 7.62X_8 - 6X_9 + 1.95X_{10} + 4.3$$

In the above function (DA function) the cut-off point or value is -0.0071, the cut-off point means that companies with a DA score greater than or equal to -0.0071 are predicted as solvent and companies with a DA score less than -0.0071 are predicted as being bankrupt. The performance of the model is evaluated using the overall accuracy rate and accuracy is based on the total number of the correct classification shown in table 7. Furthermore, the most important financial ratios that investors can use for making their decisions based on the DA model are; Return on Assets (ROA), Debt Ratio and Margin before Interest and Tax.

Table 6. DA model classification summary

Actual observed	Bankrupt	Non-bankrupt	Total	Percent Correct	Type I error	Type II error
Bankrupt	7	0	7	100%	0%	0%
Non-bankrupt	0	7	7			

4. Results

Table 8 shows the results after testing the PLMNN and DA models on the original sample. The PLMNN model cut-off point is 0.5; using a cut-off level of 0.5 to classify the output values, the cut-off point means that companies with a PLMNN score greater than or equal to 0.5 are predicted as solvent and companies with a PLMNN score less than 0.5 are predicted as being bankrupt. The performance of the model is evaluated using the overall accuracy rate and accuracy is based on the total number of the correct classification shown in table 7.

¹The value varies due to the financial ratios of company selected.

Table 7. Classification Results for PMLNN and DA models (Original Sample)

PLMNN model					DA model			
Number of correct classifications	Percent of correct classifications	Percent of classification		Correct classification rate	Percent of correct classifications	Percent of classification		
		Type I error	Type II error			Type I error	Type II error	
7	100%	0%	0%	7	100%	0%	0%	

The holdout sample was used to assess the PLMNN and DA models. The results obtained by using the PLMNN and DA models on the holdout sample are presented in Tables 8 and 9. Comparative classification results of PLMNN and DA models are summarized in Table 10.

Table 8. Classification Results for PMLNN model (holdout sample)

Year prior to bankruptcy	Actual observed	Predicted		Percent Correct	Percent of error classification	
		Bankrupt	Non- bankrupt		Type II error	Type I error
Year -1	Bankrupt	9	0	100.0%	0%	0%
	Non- bankrupt	0	9	100.0%		
	Overall Percent			100.0%		
Year -2	Bankrupt	8	1	88.89%	0%	11.11%
	Non- bankrupt	0	9	100.0%		
	Overall Percent			94.44%		
Year -3	Bankrupt	7	2	77.78%	11.11%	22.22%
	Non- bankrupt	1	8	88.89%		
	Overall Percent			83.34%		

As indicated in Table 8, the PMLNN model is extremely accurate in classifying 100% of the total sample correctly for one year prior to bankruptcy, but the accuracy rate declined to 94.44% for the second year prior to bankruptcy. The Type I error proved to be only 11.11%, while the Type II error was not recorded. For the third year prior to bankruptcy, the accuracy rate dropped to 83.34% with the Type I error proved to be only 22.22%, while the Type II error increased to 11.11% in this test. Nevertheless, the PMLNN achieved high overall classification accuracy for two years prior to bankruptcy, with an accuracy rate of 100% and 94.44% respectively.

Table 9. Classification Results for DA model (holdout sample)

Year prior to bankruptcy	Actual observed	Predicted		Percent Correct	Percent of error classification	
		Bankrupt	Non- bankrupt		Type II error	Type I error
Year -1	Bankrupt	9	0	100.0%	0%	0%
	Non- bankrupt	0	9	100.0%		
	Overall Percent			100.0%		
Year -2	Bankrupt	5	4	55.56%	11.11%	44.44%
	Non- bankrupt	1	8	88.89%		
	Overall Percent			72.22%		
Year -3	Bankrupt	4	5	44.44%	22.22%	55.56%
	Non- bankrupt	2	7	77.78%		
	Overall Percent			61.11%		

As indicated in Table 9, the DA model is extremely accurate in classifying 100% of the total sample correctly for one year prior to bankruptcy, but the accuracy rate falls from 100% one year prior to bankruptcy to 72.22% two years prior to bankruptcy. The Type II error proved to be 44.44% while the Type I error was lower at 11.11% in this test. For the third year prior to bankruptcy, the accuracy rate dropped to 61.11%, with the Type I error proved to be only 22.22%, while the Type II error was slightly larger at 55.56% in this test. Nevertheless, the DA achieved high overall classification accuracy for one year prior to bankruptcy with an accuracy rate of 100%.

5. Discussion

Table 10 presented the results of two methods used in this study. The results indicated that the MLPNN model achieved the highest overall classification accuracy rate for all three years prior to bankruptcy than the DA model. Furthermore, the results indicate that the accuracy rate of the MLPNN model increased from 77.78% for the third year prior to bankruptcy to 100% for the first year prior to bankruptcy. This result supports the rejection of the first hypothesis which states that the MLPNN model is unable to predict bankruptcy of industrial companies in Jordan during the three years prior to bankruptcy.

As Table 10 shows that the accuracy rate of the DA model increased from 61.11% for the third year prior to bankruptcy and reached 100% for the first year prior to bankruptcy. These results support the rejection of the second hypothesis which states that the DA model is unable to predict bankruptcy of industrial companies in Jordan during the three years prior to bankruptcy.

It is also noted from Table 10 and Figure 2 that the MLPNN model achieved the highest overall classification accuracy rate for all three years prior to bankruptcy, with an average classification rate of 92.59% while the DA model achieved an average classification rate of 77.78%.

Table 10. Comparative Classification Results

Year prior to bankruptcy	MLPNN model	DA model	MLPNN model		DA model		Altman model	
			Type I error	Type II error	Type I error	Type II error	Type I error	Type II error
Year -1	100%	100%	0%	0%	0%	0%	10%	25%
Year -2	94.44%	72.22%	11.11%	0%	44.44%	11.11%	15%	60%
Year -3	83.34%	61.11%	22.22%	11.11%	55.56%	22.22%	16%	48%
Average rate	92.59%	77.78%	11.11%	3.70%	33.33%	11.11%	13.67%	44.33%

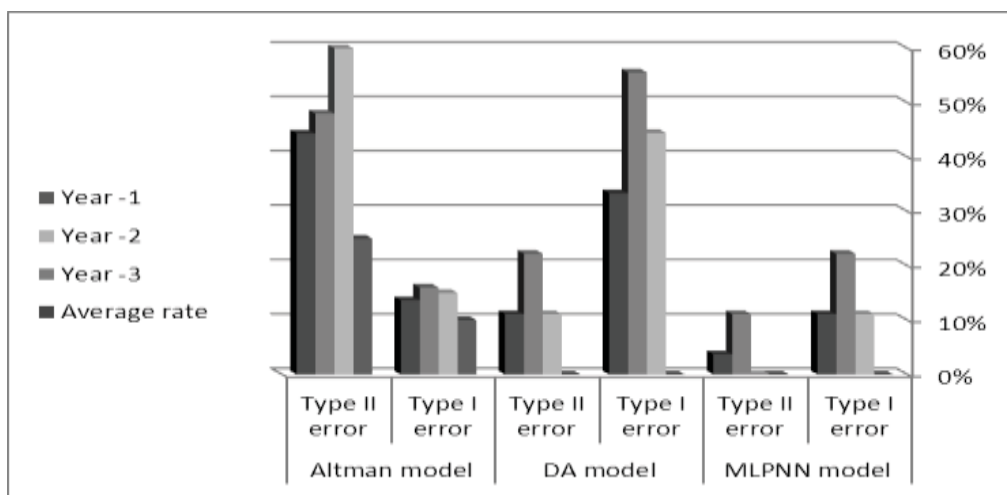


Figure 2. Classification rates over the three years tested

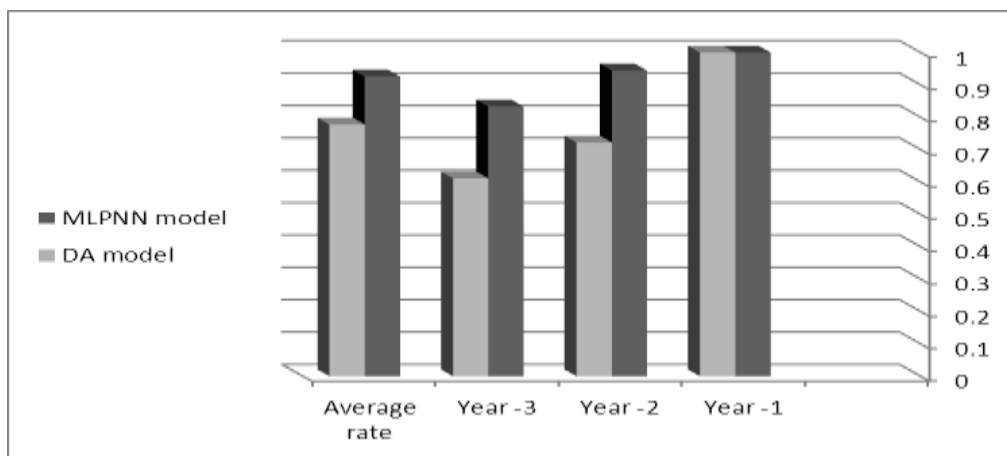


Figure 3. Type I and type II errors for each model

Furthermore, since the type I error is more costly than the type II error (Charitou et al., 2004), Altman et al. (1977) and Charitou et al. (2004). In addition, if models minimize type I error rates they consider to be superior. Table 10 and Figure 3 shows that the MLPNN model provides the lowest type I error percentage in the first two years prior to bankruptcy. However, type II error rates are highly low (3.70% on average) and this model may consider reliable for practical application purposes. These results support the rejection of the first hypothesis which states that the MLPNN model is unable to predict bankruptcy of industrial companies in Jordan during the three years prior to bankruptcy.

6. Conclusion

The comparison of the multilayer perceptron neural network (MLPNN) and discriminant analysis (DA) in terms of ability to predict bankruptcy in Jordan, The study population consisted of companies in the Industry sector in Jordan, over a 14-year period (2000-2014). The sample contains 32 industrial companies in Jordan to develop two models using the MLPNN and DA.

The MLPNN and DA models can predict bankruptcy of Industry sector in Jordan, with the accuracy of 100% for one year before bankruptcy, and this is the same prediction rate accuracy for the DA model. On the holdout sample, the results indicated that the MLPNN model achieved the highest overall classification accuracy rate for all three years prior to bankruptcy than the DA model, and the MLPNN model result in low type I error rates. The results are associated with the findings of Odom & Sharda (1990) and Raghupathi & Schkade and Raju (1991), Koh & Tan (1999) and Charitou et al. (2004). They also found that the models developed with neural networks (NN) can achieve a better classification accuracy rate than other statistical methods. Furthermore, the MLPNN model provides the lowest type I error percentage in the first and second years before bankruptcy. Nonetheless, type II error rates are highly low (3.70% on average) and this model may consider reliable for practical application purposes in Jordan. On the other hand, the most important financial ratios that investors can use for making their decisions based on the two models are; Return on Assets (ROA), Debt Ratio and Margin before Interest and Tax.

Finally, we recommended that the proposed model must apply by the Jordanian Companies Control Department (CCD) in the Ministry of Industry & Trade, so the CCD will be able to take an appropriate action and necessary corrective decisions in the industrial sector. Furthermore, CCD must publish a guide to using these statistical models such as MLPNN model. For future research other statistical methods can also be used to predict bankruptcy such as the Radial basis neural network (RBNN) in order to compare the results with the multilayer perceptron neural network (MLPNN) model.

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Appendix A

Table 1. Financial ratios (Independent variables)

Company name	Current ratio	Return on assets	Cash assets ratio	Debt ratio	Cash Flow Coverage Ratio	Current assets to total assets ratio	Long-term debt/total assets	Margin Before Interest and Tax	Asset Turnover Ratio	Working Capital Ratio
	x ₁	x ₂	x ₃	x ₄	x ₅	x ₆	x ₇	x ₈	x ₉	x ₁₀
Jordan Kuwait For Agriculture & Food Products	0.12	-0.96	0.00	0.97	-0.09	0.12	0.00	-0.52	0.23	-0.85
Nayzak Dies & Moulds Manufacturing	0.92	-0.06	0.00	0.71	0.07	0.35	0.33	-0.23	0.26	-0.03
Jordan Medical Corporation	0.20	-0.35	0.11	3.11	-0.04	0.62	0.01	-2.45	0.14	-2.49
International Textile Manufacturing	1.64	0.08	0.01	0.45	-0.03	0.37	0.23	-0.68	0.06	0.14
United Glass Industries	33.49	0.01	0.53	0.02	0.49	0.53	0.00	0.33	0.02	0.52
Arab Investment & International Trade	1.84	-0.07	0.02	0.23	-0.23	0.30	0.07	-0.21	0.26	0.14
Arab Food & Medical Appliances	0.13	-0.20	0.00	1.04	-0.14	0.14	0.00	-0.96	0.10	-0.91
Arab Center For Pharmaceuticals & Chemicals Industries	15.00	0.12	0.23	0.05	2.85	0.80	0.00	0.27	0.50	0.74
Arab Aluminium Industry	4.04	0.08	0.01	0.12	1.92	0.36	0.00	0.18	0.61	0.27
Middle East Pharmaceutical & Chemical Industries	4.80	0.02	0.17	0.13	-0.06	0.60	0.00	0.02	0.83	0.47
Jordan Paper & Cardboard Factories	3.61	0.07	0.06	0.12	0.36	0.42	0.00	0.11	0.69	0.30
Al-ekbal Printing & Packaging	3.08	0.04	0.09	0.14	0.21	0.44	0.00	0.07	0.61	0.30
National Aluminium Industrial	2.91	0.07	0.09	0.26	0.42	0.42	0.43	0.17	0.46	0.28
Universal Modern Industries	2.35	0.04	0.01	0.13	0.10	0.26	0.00	0.22	0.30	0.11

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An Empirical Examination of the Relation between Consumption Values, Mobil Trust and Mobile Banking Adoption

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Abstract

The purpose of this study is to examine the relations among consumption values of the consumers relevant to mobile banking services, adoption to mobile banking and mobile trust. For this purpose, we propose a structural model which demonstrates the relations between consumption values, mobile banking adoption and mobile trust of consumers. The data had been collected through survey applied on individuals who are using mobile banking services in Turkey. It had been reached to 175 participants in total. The obtained data had been analyzed by partial least squares path analysis (PLS-SEM) which is known as second generation structural equation modeling. As the result of the research, it had been concluded that the conditional value, emotional value and epistemic value –from among consumption values- have positive and statistically meaningful effect on adoption to mobile banking, and that the social value has negative and statistically meaningful effect. It is being observed that there is positive and statistically meaningful relation in between trust relevant to mobile banking and conditional value, emotional value and functional value. And there are positive and statistically meaningful relations on trust relevant to mobile banking and adoption to mobile banking.

Keywords: mobile banking, consumption values, m-trust, mobile banking adoption

1. Introduction

Self-service technologies, which had emerged by the fast development of the technology, had caused the rise of new conditions in between the enterprises and customers. Along with the development of self-service technologies, the customers have become both the producer and user of the service they get (Li, 2013). And the banks, by keeping pace with the changing conditions, have formed new channels such as ATM, internet banking and mobile banking for their customers (Laukkanen & Pasanen, 2008). Along with the development of mobile technologies and mobile devices, the mobile banking has started gain a significant seat within the banking industry due to its characteristics such as interactivity, ease and availability everywhere provided by the mobile technologies (Gu, Lee & Suh, 2009).

The increase of the use of smart phones as a part of the daily lives of the consumers has increased the popularity and use mobile applications. The rise of various mobile applications by the integration of technology within commercial life is enabling the consumers to easily use such applications in their daily lives, shopping and financial transactions. The number of services provided by mobile banking is increasing, and the technical problems are decreasing. All these developments have an effect that increases the use of mobile banking applications.

While a part of the consumers are quickly adapting the new technologies in banking industry, it is being understood that a part of them are encountering adoption and trust problems (Wang, Lin & Luarn, 2006; Chung & Kwong, 2009; Koo & Wati, 2010). This fast development has directed the banking industry to determine the factors that are limiting use of mobile banking services by the consumers and that may increase the use of these applications. In this study, it has been searched how the dimensions consisting the Consumption Values Theory affect the adoption of consumers to mobile banking and the trust of consumers towards mobile banking.

2. Theoretical Backgrounds

Mobile banking had provided its first service by the end of 1990s with the cooperation of German company Playbox and Deutsche Bank (Shaikh & Karjaluo, 2015). Mobile banking is being defined as realizing the interaction in between the bank and the customer through mobile phones, personal digital assistants (PDA), and other tools except smart phones and computers (Barnes & Corbitt, 2003; Tobbin, 2012). In mobile banking, the users are able to realize writing cheques, account transactions and various payments by using the internet banking on their mobile tools (Lee & Chung, 2009).

Several recent studies have focused on evaluating the impact of e-commerce and mobile banking adoption on daily business practices of the firms (Aboelmaged & Gebba, 2013; Riasi & Pourmiri, 2015; Qu, Pinsonneault, Tomiuk, Wang & Liu, 2015; Tran & Corner, 2016; Hanna, 2016). Recent improvements in technology have led to changes the interactions between consumers and banks. Banks are continuously producing innovative banking services to meet consumer needs and expectations. Due to increase the flexibility and mobility of the financial services, mobile banking application has been recently seen as promising development in financial service (Tran and Corner, 2016). According to the research of Juniper Research; the mobile phone devices is forecast to reach two billion users by the end of the 2020. This rate will present %37 of the global adult population. The forecast indicates that the mobile banking will be a huge market

(<https://www.juniperresearch.com/press/press-releases/mobile-banking-users-to-exceed-1-bn-this-year>).

Mobile banking adoption is closely related with the acceptance process of the technology by the consumer. And mobile banking adoption may be specified as the intentions of the customers to use mobile banking services, their adoption of mobile banking and their willingness for using mobile banking. In literature, there are many studies examining the factors affection the adoption of mobile banking (Luarn & Lin, 2005; Gu et al., 2009; Akturan & Tezcan, 2012; Laukkanen & Pasanen, 2008; Li, 2013; Ying & Can, 2010; Tobbin, 2012; Shen, Huang, Chu & Hsu, 2010; Cudjoe, Anim & Nyanyofio, 2015; Saeed, 2011; Hanafizadeh, Behboudi, Koshksaray & Tabar, 2014). The variables which is commonly studied in mobile banking adoption models are perceived ease of use, perceived usefulness, performance expectancy, relative benefits of the mobile banking and trust (Oliveria, Faria, Thomas & Popovic, 2014). In this study, consumption values and trust variables are being used in the research model to explain the consumer mobile banking adoption.

The “value” concept is being used as a variable affecting the consumer mobile banking adoption different from the current common literature. Perceived value concept helped in explaining consumers decision making behaviors for years. Also many studies use perceived value and technology adoption relation to explain better understanding consumer technology adoption (Turel, Serenko & Bontis, 2007; Kim, Chan & Gupta, 2007; Kleijnen, De Ruyter & Wetzels, 2007; Liu, Zhao, Chau & Tang, 2015). Turel et al. (2007) stated that perceived value can be used to explain the consumer technology adoption in connection with the cognitive structure of technology adoption. Perceived value has a unidimensional and multidimensional structure (Sánchez-Fernández & Iniesta-Bonillo, 2007; Karjaluo, Jayawardhena, Leppaniemi & Pihlström, 2012). Consumption Value Theory is one of the multidimensional models of perceived value.

Consumption Values Theory developed by Sheth, Newman & Gross (1991a; 1991b) is consisting the theoretical basis of this study. The marketing literature, consumption values and benefit are being defined as factors established on creating value and customer loyalty, and determining the procurement decision and the use of products and services in the future (Pura, 2005). Before making explanations relevant to consumption values theory, it will be beneficial to define what the value means for the consumer. Value, in respect of the consumer, is being defined as the general assessment of the consumer regarding the benefits obtained from the products and services considering the things given and obtained by the consumer (Zeithaml, 1988). In this definition, Zeithaml (1988) deems the value perception of the consumer relevant to a product or service as the combination of costs assumed in obtaining the product or service and of the benefits gained after obtaining. And in this study, value has been defined based on the definition of Zeithaml (1988) as general assessment of the consumers regarding the benefits obtained by the use of mobile banking services.

Sheth et al. (1991a; 1991b), by the Consumption Values Theory they had developed, are specifying that the preferences of the consumers is a function of the consumption values. According to Consumption Values Theory, the preference decisions of the consumers are realizing as being affected from five consumption values as being functional value, emotional value, social value, conditional value and epistemic value. This theory is able to be applied on many preferences of the consumers as from consumer nondurables to services.

Why the consumers purchase a product or why they don't purchase a product, why they prefer a type of product and why they prefer a brand over the other consist the focus point of the consumption values theory (Sheth et al.,

1991a). Consumption Values Theory is based on three basic assumptions while examining the preference behaviors. These are in the form that the preferences of the consumers is a function of the multiple consumption values, that the contribution of each consumption value may be different in each preference decision, and that the consumption values are independent from each other (Sheth et al., 1991b).

Some limitations are required to be considered in the implementation of the Consumption Values Theory. The theory is able to be applied in personal decision making conditions, and in their systematic and voluntary preferences. More clearly, the theory examines the behaviors in which the consumers are not being obliged to make a preference and in which they are not obliged to use a product or service that some other selects for him and that consist of their voluntary preferences (Sheth et al., 1991a).

When banking and banking transactions are in subject, trust is coming to the forefront as one of the main factors affecting the behaviors of consumers. Trust has descriptions that differentiate from each other in literature depending on different research fields such as sociology, social psychology, psychology and marketing (Papadopoulou, Andreou, Kanellis & Martakos, 2001; Suh & Han, 2002). Fukuyama (1995) defines trust as cooperative behaviors of others and reliability expectation that affect the economic performance of a country. Trust may be deemed as the basis of any business or personal interaction. The enterprises or individuals require trusting the government or the institutions that they are a party of (Aksoy, 2012). Trust is being deemed as a basic factor in establishing long-term relations with the consumers and in maintaining it (Sharma & Patterson, 2000). And the thing being referred in this study is relevant to the fact that trust is the consumer's certainty about the supplier. Actually the trust felt towards mobile banking along with being a part of the trust felt by the consumers towards the bank, and along with the trust that the consumers feel towards electronic banking and the trust that the consumer feels towards the bank being related, it cannot be said that they are being assessed within the same frame. Because many consumers are able to remain loyal due to their trust towards their bank, but they are able to stay distant to technology based new applications of the bank.

Chung and Kwon (2009) specify that trust is an effective factor in mobile banking. Mobile banking may face difficulties in gaining the trust of the customers compared to internet banking due to constraints arising from a narrower display, slow pace and limited information presentation. In order to overcome these difficulties, the banks are required to be more objective and reliable in mobile banking services. And another difficulty in establishing trust in mobile banking is the change of trust against mobile banking as per time. And this problem is arising from lack of establishment of face-to-face relation with the customers.

3. Conceptual Framework and Hypotheses Development

3.1 Consumption Values Relevant to Mobile Banking Services

In the consumption values theory developed by Sheth et al. (1991a; 1991b), there are five consumption values affecting the preferences of the consumers. These values are functional value, emotional values, social values, conditional value and epistemic value. The consumption values theory has been used in many studies in marketing literature (see. Finch, 2006; Lin, Huang & Wang, 2010; Lin & Huang, 2012; Punj, 2011; Peng, Chen & Wen, 2014; Wang, Liao & Yang, 2013; Bolker, Gimpel & Hedman, 2009).

Bolker et al. (2009) had examined the experiences of smart phone users with the consumption values theory, and had concluded that all five consumption values have significant contributions to explain and understand the consumer experiences. McManus & Standing (2004), in their study realized to understand the mobile trade adoption and its reasons, suggest that consumption values theory and five sub-values of this theory may be used.

The functional value is being deemed as a significant value affecting the preferences of the consumers (Sweeney & Soutar, 2001). The functional value is being defined as the value arising when the products and services fulfill their functional, beneficial and physical purposes, and functional value is relevant to the performance, reliability, durability and price of the product and service (Sheth et al., 1991a; 1991b). There are studies regarding that the functional value affects the information technology systems (Tzeng, 2011), mobile services (Pura, 2005, Turel et al., 2007), use of mobile applications (Wang et al., 2013), and use of mobile banking services (Goh, Suki & Fam, 2014). Considering the studies performed, the hypothesis regarding functional value has been developed as follows.

H1: Functional value affects consumers' mobile banking adoptions.

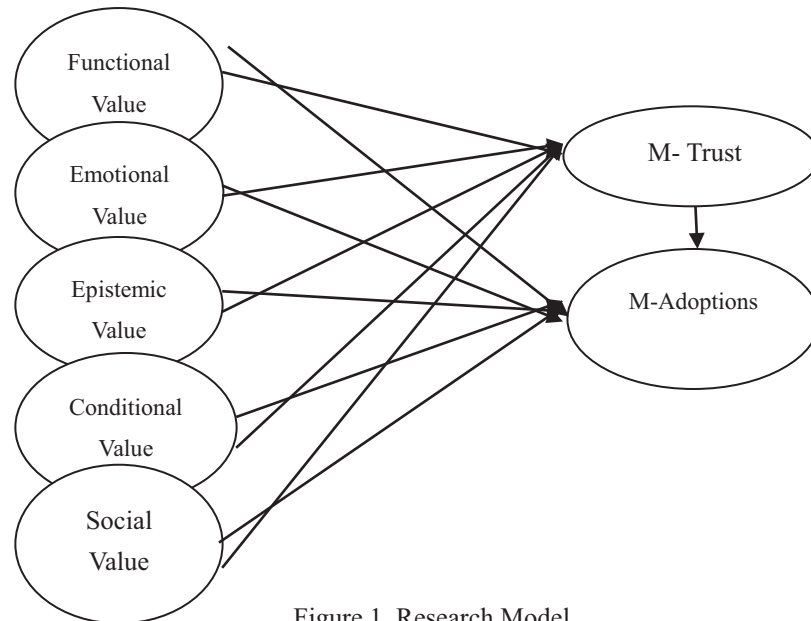


Figure 1. Research Model

Social value specifies the dimension of value relevant to the one or more social groups that the consumer is in relation with. Social value consists of the perceptions of demographic, socio-economic, cultural and ethnical groups stereotyped as positive or negative in the society in which the consumer lives (Sheth et al., 1991a; 1991b). There are studies in the direction that social value affects use of mobile services (Tang & Foster, 2007; Yang & Jolly, 2009), use of mobile applications (Wang et al., 2013) and use of mobile banking services (Goh et al., 2014). Considering the studies performed, the hypothesis regarding social value has been developed as follows.

H2: Social value affects consumers' mobile banking adoptions.

Regarding emotional value, one of the factors motivating the customers in preferring the products and services and in establishing connection with them is emotions (Levy & Hino, 2016). It is related with the ability of product and service to mobilize the affections or emotions. In other words, it is the value dimension relevant to emotions caused by the product or service in the consumer (Sheth et al., 1991a; 1991b). There are studies in the direction that emotional value is effective in the use of mobile services (Yang & Jolly, 2009; Turel, Serenko & Bontis, 2010; Tang & Foster, 2007), in the use of mobile applications (Wang et al., 2013), and in the use of mobile banking services (Goh et al., 2014). Considering the studies performed, the hypothesis regarding emotional value has been developed as follows.

H3: Emotional value affects consumers' mobile banking adoptions.

Regarding epistemic value, it is being defined as the value dimension gained by the ability of the product or service to arouse curiosity, bring in innovation and satisfy the knowledge need (Sheth et al., 1991a; 1991b). There are studies in the direction that epistemic value affects use of mobile services (Tang & Foster, 2007; Tzeng, 2011), use of mobile applications (Wang et al., 2013) and use of mobile banking services (Goh et al., 2014). Considering the studies performed, the hypothesis regarding emotional value has been developed as follows.

H4: Epistemic value affects consumers' mobile banking adoptions.

Regarding the conditional value, it means the value dimension gained by the special conditions which the consumer faces in a case of decision making. The obtained benefit is frequently relevant to the condition involved (Sheth et al., 1991a; 1991b). Wang et al. (2013) had concluded in their study that consumption values play intermediacy role in the relation in between conditional value and use of mobile applications. Goh et al. (2014) had concluded in their study that there is no relation in between conditional value and intention of using mobile banking. Considering the studies performed, the hypothesis regarding conditional value has been developed as follows.

H5: Conditional value affects consumers' mobile banking adoptions.

3.2 M-Trust and Adoption of Mobile Banking

In the studies performed relevant to trust in mobile banking, Bidarra, Muñoz-Leiva & Liébana-Cabanillas (2013) specify that trust positively affects the attitudes relevant to ease of use of mobile banking and use of electronic

system, and that it negatively affects the perception of risk. Gu et al. (2009) had concluded by their studies that trust against mobile banking affects the intention of using mobile banking. Koo & Wati (2010) had concluded in their studies that trust has direct effect on satisfaction of end users and perceived practicality. Hanafizadeh et al. (2014) specify by their studies that trust had direct effect on the intention of using mobile banking.

The following hypothesis had been developed based on the studies examining the relations in between m-trust and adoption of mobile banking.

H6: M-Trust affects consumers' mobile banking adoptions.

3.3 M-Trust and Consumption Values

As no study directly examining the relation in between m-trust and consumption values is found as the result of the literature review performed, there are several studies analyzed trust and value relationship. Harris & Goode (2004) finds out a strong positive relation between perceived value and trust in online markets. Kim, Zhao & Yang (2008) explains perceived value is important in influencing customer trust. Karjaluoto et al. (2012) study shows that perceived value (functional value, monetary value, social value and emotional value) used as a variable in the model increases trust in telecommunication industry.

The following hypotheses had been developed for determining the relations in between consumption values regarding mobile banking services and m-trust.

H7a: Functional value affects consumers' m-trust toward mobile banking.

H7b: Emotional value affects consumers' m-trust toward mobile banking.

H7c: Epistemic value affects consumers' m-trust toward mobile banking.

H7d: Conditional value affects consumers' m-trust toward mobile banking.

H7e: Social value affects consumers' m-trust toward mobile banking.

4. Research Design

4.1 Data Collection

Survey method had been used in the collection of data. The data had been collected through accidental sampling from consumers who are using mobile banking services in Turkey. For the participants of the survey, it was found sufficient for them to perform at least one transaction over the mobile applications of their bank. The data had been collected within the period of March-June 2016, and 175 usable surveys in total had been obtained.

4.2 Sample Characteristics

In the following table, there are demographic features of the participants using the mobile banking services and their frequencies of using mobile banking.

Table 1. Demographic Features of the Participants

	n	%
Gender		
Female	69	39.4
Male	106	60.6
Income		
0-1300 TL	74	42.3
1301-2500 TL	37	21.1
2501-3500 TL	28	16.0
3501-4500 TL	24	13.7
4501 TL and over	12	6.9
Age		
18-25	81	46.3
26-35	51	29.1
36-45	29	16.6
46 and over	14	8.0
Education		
Less- High School	6	3.4
High School	18	10.3
College	28	16.0
Bachelor of Science	102	58.3
Master Degree and PhD	21	12.0
Frequency of Mobil Banking Use		
10 and less	121	69.1
11-30	36	20.6
31 and over	18	10.3

4.3 Questionnaire Design

The survey used in this study has been formed by using the previous studies in literature. The questions relevant to functional value had been formed by using the studies of Goh et al. (2014), Wang et al. (2013), Lee, Kim, Lee & Kim (2002), Sweeney & Soutar (2001), the phrases relevant to emotional value had been formed by using the studies of Wang et al. (2013); Lee et al. (2002), Sweeney & Soutar (2001), the phrases relevant to social value had been formed by using the studies of Goh et al. (2014), Wang et al. (2013), Lee et al., (2002), Sweeney & Soutar (2001), the phrases relevant to epistemic value had been formed by using the studies of Goh et al. (2014), and the phrases relevant to conditional value had been formed by using the studies of Goh et al. (2014) and Wang et al. (2013). And the phrases relevant to m-trust and m-banking adoption had been formed by using the study of Salimon, Yusoff & Mokhtar (2016). Five point Likert scale had been used in the survey.

4.4 Scale Validity and Reliability

In the assessment of validity and reliability of the structure, factors loads, Cronbach Alpha coefficient, composite reliability, average variance extracted (AVE) and discriminant validity criteria had been used. Factor loads are being used in the assessment of validity of combination, and factor loads are generally over 0.50, and the ideal factor load is over 0.70 (Hair, Black, Babin, Anderson & Tatham, 2006).

Table 2. Reliabilities and Validities of the Model

Structures	Variables	Factor Loadings	C.Alfa	C.R.	AVE
Functional Value	FV1	0.813	0.844	0.883	0.532
	FV2	0.770			
	FV3	0.810			
	FV4	0.598			
	FV5	0.762			
	FV6	0.647			
	FV7	0.629			
Conditional Value	CV1	0.690	0.767	0.842	0.518
	CV2	0.633			
	CV3	0.636			
	CV4	0.829			
	CV5	0.790			
Epistemic Value	EPV1	0.859	0.760	0.860	0.673
	EPV2	0.805			
	EPV3	0.796			
Emotional Value	EV1	0.726	0.780	0.850	0.532
	EV2	0.781			
	EV3	0.757			
	EV4	0.715			
	EV5	0.660			
Social Value	SV1	0.766	0.876	0.909	0.668
	SV2	0.818			
	SV3	0.850			
	SV4	0.867			
	SV5	0.782			
M-Trust	MT1	0.814	0.875	0.907	0.621
	MT2	0.710			
	MT3	0.642			
	MT4	0.822			
	MT5	0.899			
	MT6	0.814			
M-Banking Adoption	MA1	0.746	0.860	0.891	0.505
	MA2	0.715			
	MA3	0.768			
	MA4	0.668			
	MA6	0.653			
	MA7	0.744			
	MA8	0.688			
	MA9	0.698			

As it given in Table 2, it is being observed that the factor loads of all the variables in the research are over 0.50 and statistically significant. It may be said that the variables represent the structures in the research. Cronbach Alpha coefficient had been used in assessing the reliabilities of the variables. It is being expected for the Cronbach Alpha coefficient to be over 0.70 (Hair et al., 2006). And the composite reliability value is being

calculated as the internal consistency of Cronbach Alpha coefficient, and it is being required to be over 0.70, and the average variance extracted is required to be over 0.50 (Fornell & Lacker, 1981; Hair et al., 2006; Hair, Sarstedt, Hopkins & Kuppelwieser, 2014). It is being observed that the Cronbach Alpha coefficients of the structures of the research are over 0.70, that their combined reliability values are over 0.70, and that their AVE values are over 0.50. And this may be deemed as an indicator that the combination validity of the structures of the research is provided.

In the assessment of the discriminant validity, Fornell & Lacker (1981) criteria had been used. The square root of average variance extracted (AVE) being higher than the correlation among all structures and each phrase is being deemed as an indicator that structures have discriminant validity (Fornell & Lacker, 1981).

As seen in the above table, as the diagonal values relevant to each structure are higher than the values in their own columns, discriminant validity among structures had been enabled.

Table 3. Correlations among the Structures

	Conditional Value	Emotional Value	Epistemic Value	Functional Value	M-Banking Adoption	M-Trust	Social Value
Conditional Value	0.720						
Emotional Value	0.488	0.729					
Epistemic Value	0.355	0.359	0.820				
Functional Value	0.592	0.548	0.288	0.723			
M-Banking Adoption	0.765	0.623	0.423	0.656	0.711		
M-Trust	0.545	0.542	0.343	0.631	0.653	0.788	
Social Value	0.087	0.401	0.260	0.027	0.082	0.183	0.817

Note: Bold elements placed on the diagonal line represent the square root of AVE

4.5 Data Analysis and Results

In the analysis of research model, partial least squares path analysis (PLS-SEM) had been used. The PLS-SEM approach had been developed by Wold and had been expanded by Lohmöller (Hair, Sarstedt, Ringle & Mena, 2012). The PLS-SEM approach is a regression based approach minimizing the residual variances of latent structures (Hair, Ringle & Sarstedt, 2011). The PLS-SEM approach is also being known as second generation structural equation modeling measuring the measurement model and structural model at the same time (Compeau & Higgins, 1995).

SmartPLS 3.0.4 (Ringle, Wende & Becker, 2015) software had been used in the analysis of the research model. PLS algorithm had been calculated in the calculation of the path coefficients relevant to the research's model and R² values. And boot strapping method had been used in the calculation of the t values of the research model and their significance. In this research, t values and significances had been calculated by selecting 1.500 sub samples from the original data.

In the following table, there are results of analysis relevant to research model.

Table 4. The Results of PLS Analysis

Path	Hypothesis	Beta	t-value	p	Non-Supported/Supported
Functional Value -> M-Banking Adoption	H1	0.101	1.434	0.152	Non-Supported
Social Value -> M-Banking Adoption	H2	-0.126	2.664	0.008	Supported
Emotional Value -> M-Banking Adoption	H3	0.256	4.052	0.000	Supported
Epistemic Value -> M-Banking Adoption	H4	0.111	2.263	0.024	Supported
Conditional Value -> M-Banking Adoption	H5	0.447	8.266	0.000	Supported
M-Trust -> M-Banking Adoption	H6	0.193	3.351	0.001	Supported
Functional Value -> M-Trust	H7a	0.396	4.566	0.000	Supported
Emotional Value -> M-Trust	H7b	0.178	2.089	0.037	Supported
Epistemic Value -> M-Trust	H7c	0.082	1.226	0.220	Non-Supported
Conditional Value -> M-Trust	H7d	0.189	2.611	0.009	Supported
Social Value -> M-Trust	H7e	0.063	0.977	0.329	Non-Supported

Functional value is increasing trust in mobile banking, but it doesn't have an effect on the adoption of mobile banking. Emotional value has an effect increasing the trust in mobile banking and the adoption of mobile banking. While the epistemic value has no statistically significant effect on the trust relevant to mobile banking, it has an effect that increases the adoption of mobile banking. Conditional value increases the trust relevant to mobile banking and the adoption of mobile banking. While the social value has no effect on mobile banking trust, it has an effect decreasing the adoption of mobile banking. Finally, it is possible to say that that trust relevant to

mobile banking have an effect increasing the adoption of mobile banking.

And finally an assessment will be made relevant to the R^2 and conformity goodness of the research model. R^2 is representing the extracted variance of each variable (Hair et al., 2012). It is a significant criteria used in the assessment of structural equation model along with the significances of R^2 path coefficients. R^2 is getting a value in between 0 and 1, and high R^2 values are being deemed as the indicator of well decisiveness. In the researches on consumer behaviors, this value being over 0.20 is being deemed as high (Hair et al., 2011). When the R^2 values in this research are considered, m-trust R^2 value is 0.489, and R^2 value relevant to m-banking adoption is 0.729. And these values are indicators that the structures of the research have strong decisiveness on m-trust and m-banking adoption.

SRMR criteria had been used in assessing the conformity goodness of research model. SRMR is providing the difference in between observed and expected correlations. This value being smaller than 0.10 is an indicator that the research model is valid (Hu & Bentler, 1999; Henseler et al., 2014). In our research, SRMR value is 0.081. And this value is an indicator that the research model is a valid model.

5. Conclusion and General Discussion

Our findings indicate that conditional value is being deemed as the consumption value that most strongly affects the adoption of mobile banking. Due to many of its features such as the situation of the users, feeling of time pressure, flexibility of making transaction as independent from place, it is being observed that conditional factors have significant place in the use of mobile banking. Goh et al. (2014) couldn't find in their study any relation in between conditional value and use of mobile banking. As the result of the research, it is being observed that conditional value have positive effect on trust relevant to mobile banking. Conformity of mobile banking to the status of the users may be deemed as a factor increasing trust in mobile banking.

According to the results of the research, it is being observed that emotional value has positive and statistically significant effect on adoption of mobile banking and trust relevant to mobile banking. The satisfaction and good feelings caused by the use of mobile banking services are increasing the use of mobile banking. The studies in literature relevant to mobile service, mobile applications and mobile banking services are also supporting this result (Yang & Jolly, 2009; Turel et al., 2010; Tang & Foster, 2007; Wang et al., 2013; Goh et al., 2014). It may be said that the good feelings of the users for the mobile banking services, their satisfaction from the use of these services, finding them interesting and entertaining are enabling the increase of trust relevant to mobile banking services and applications.

According to the results of the research, it is being observed that epistemic value has positive and statistically significant effect on mobile banking adoption, but that it doesn't have a significant effect on trust relevant to mobile banking. As the users' care on innovation increases, their rates of using mobile banking service –which is a new e-commerce channel-, are increasing. The studies in literature realized relevant to mobile services, mobile applications and mobile banking services are also supporting this result (Tang & Foster, 2007; Wang et al., 2013; Goh et al., 2014; Tzeng, 2011). Despite having studies in literature regarding that the functional value affects mobile services, use of mobile services and use of mobile banking services (Pura, 2005; Turel et al., 2007; Wang et al., 2013; Goh et al., 2014), no significant relation could be found in between functional value and adoption of mobile banking by this study. But it had been concluded that functional value has a strong effect on trust relevant to mobile banking. It can be said that the perception of mobile banking services as quality, high performance and economic by the users increases the trust relevant to mobile banking.

According to the results of the research, it had been concluded that social value has negative and statistically significant effect on mobile banking adoption, and that it doesn't have significant effect on trust relevant to mobile banking. Mobile banking users' desire to be accepted by others, and their perceptions consisting social value such as a tool of expressing themselves and as assigning a personal meaning in respect of gaining social approval have an effect that decreases the mobile banking adoption of the consumers. Because benefits, economic reasons such as economy of the use of mobile banking rather than social norms, saving of time and decrease of energy cost lies on the basis of use of mobile banking applications by the consumers. In literature, there are studies regarding that social value is effective in the use of mobile services, in the use of mobile applications and in the use of mobile banking services (Yang & Jolly, 2009; Tang & Foster, 2007; Wang et al., 2013; Goh et al., 2014).

In the research, it had been concluded that trust relevant to mobile banking has positive and statistically significant effect on adoption of mobile banking. By many studies in literature (Lee, Lee & Kim, 2007; Gu et al., 2009; Hanafizadeh et al., 2014; Bidarra et al., 2013), it is being observed that trust relevant to mobile banking is effective on adoption of mobile banking. It is possible to say that as the trust of users relevant to mobile banking increases, the intentions of using mobile banking will also increase.

6. Suggestions

6.1 Theoretical Suggestions

In our study, the effect of consumption values relevant to mobile banking services on adoption of mobile banking and on trust relevant to mobile banking had been examined. It is being observed that there are limited studies in literature which examine the adoption of mobile banking in the context of consumption values theory. No other study examining the consumption values which may be effective on trust relevant to mobile banking had been found. For these reasons, we can say that the consumption values may be used in defining the adoption of mobile banking. And when the percentage of explaining the consumption values and mobile banking is considered, it is possible for us to say that this rate may be deemed as a good determinant compared to consumer researches. In the same manner, when the rate of explaining of adoption of mobile banking by consumption value and trust relevant to mobile banking is considered, it is being observed that it may be used as a good determinant.

6.2 Managerial Suggestions

In the research, it is being observed that conditional value has the strongest effect on the adoption of mobile banking. The enterprises wanting to increase the use of mobile banking may out the ease of use of mobile banking compared to branch banking and internet banking, lack of pressure of time and place and ease of making transaction to the forefront in their marketing implementations and strategies. By this way, they may both increase the adoption of mobile banking and decrease the crowdedness of branches. According to the results of the research, the second strongest effect is in between functional value and trust relevant to mobile banking. When the practitioners make the implementations and services of mobile banking as in conformity with quality standards, accessible, user friendly, secure and economic with consistent performance, they may increase the trust of users relevant to mobile banking, or may enable them to use it more securely. And another significant effect is in between emotional value and adoption of mobile banking. The practitioners may increase the adoption of mobile banking when they make the mobile banking services more attractive and entertaining and when they design them as to enable customer satisfaction.

7. Constraints and Future Researches

This study has many constraints. First of all, the research had been realized on a relatively narrow group selected by sampling method due to constraints of time and cost. The repetition of the research on a wider sample group will be beneficial for the validity of the results of the research. Our study is subject to mobile banking services in general. Further researches should adopt the model for activities like money transfer, investment instruments and credit application. Furthermore, the consumer consumption value relation with the risk perception, ease of use, usefulness and usability may be evaluated as valuables for future studies.

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An Analytic Hierarchy Process (AHP) Approach to Identifying Key Criteria of Taiwan's National Brand

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Abstract

Nation branding benefits industrial upgrading within a nation and closes the competitiveness gap between nations. A nation that lacks a strong, positive, reputable national brand cannot maintain its competitiveness aimed at attracting consumers, tourists, investors, or immigrants and cannot gain the respect and attention of other nations or the global media. All nations are currently vying to create their own national brands. Taiwan has also attempted to define its advantages and develop its national brand to not only respond to current development trends, but also to examine issues facing Taiwan's development. Because of this, key criteria of Taiwan's nation branding were identified in this study. The expert interview methodology was used to discuss and compile a criteria system of Taiwan's national brand and the analytic hierarchy process technique was used to calculate the relative weights for these criteria. Results showed that the most suitable criteria for Taiwan's nation branding were based on the dimension of culture; within this dimension, the criterion historical heritage was most crucial. This study can serve as a reference for the government when it needs to determine areas to focus on in nation branding.

Keywords: nation branding, culture, AHP, Taiwan

1. Introduction

A nation's struggle for prosperity is both a mental and physical state; its society must have both the drive and the means to pursue a better life (Kotler et al., 1997). These statements describe the profile of a healthy brand. A strong national brand grants a unique image that enables pricing goods higher than their qualitative or quantitative standards would normally allow and promotes prosperity for the nation (Kotler et al., 1997).

Nation branding is an active brand-building process through which the behaviors, attitudes, identity, and image of a nation are modified or affirmed. It involves shaping and creating positive platforms and favorable environments that allow the national brand to be competitive in the market (Gudjonsson, 2005).

Therefore, nation branding benefits industrial upgrading within a nation and it closes the competitiveness gap between nations. A nation that lacks a strong, positive, reputable national brand cannot maintain its competitiveness aimed at attracting consumers, tourists, investors, or immigrants and cannot gain the respect and attention of other nations or the global media. In other words, a favorable national brand is beneficial to the nation's competitiveness in the global market. In the *International Trade Forum*, it was suggested that every nation should have a long-term plan for establishing its brand to increase the competitiveness of their products and the nation itself. Simon Anholt (2009a) asserted that to a certain extent, the national brand represents certain qualities of the nation, such as strength, wealth, and sophistication. Therefore, nations should build their brands using characteristics such as creativity, music, philosophy, trust, innocence, wisdom, challenge, and safety.

All nations are currently vying to create their own national brands. Taiwan has also attempted to define its advantages and develop its national brand to not only respond to current development trends, but also to examine

issues facing Taiwan's development. Accordingly, Taiwan has currently invested tremendous resources in pursuit of the goal of nation branding. Nation branding has become the primary development goal at all levels, ranging from national industrial policies to corporate business plans. Therefore, Taiwan's nation branding is a pressing matter.

The objectives of the present study are as follows:

- (1) Review studies related to nation branding to identify key dimensions of the Taiwan brand and to develop guidelines based on these dimensions.
- (2) Consider the nation branding experiences of benchmark nations to discover Taiwan's unique attractiveness, to identify key issues in nation branding, and to promote forward-looking procedures in this area.

2. Literature Review

2.1 Defining National Brand

Nation branding is the active management of a nation's image. A unified brand concept and image that encompasses all brand activities of the nation is constructed from all impressions regarding the nation (Hankinson, 2001; Kotler & Gertner, 2002). Anholt (2003) proposed the perspective of nation as a brand. A national brand comprises the composite public opinion of a nation's competitiveness in the six areas of export, culture and heritage, tourism, people, governance, and investment and immigration. De Vicente (2004: 1) defined nation branding as "using strategic marketing to promote a country's image, products, and attractiveness for tourism and foreign direct investment." Fan (2006) asserted that a national brand could be defined as the sum of all mental associations regarding a nation held by an international audience and nation branding refers to applying brand marketing and communication techniques to improve a nation's image. Abimbola (2006) proposed that nation branding is a competitive strategy that allows entry into developed markets that are advanced and lucrative.

To summarize, a national brand is the sum of all associations regarding a nation held by an international audience that differentiate the nation from others, which are then transformed into a simplified mental image or impression. A favorable national brand can establish an image of quality and eliminate or alter existing negative impressions. Most investors and consumers reference a nation's image in their economic and purchasing decisions.

2.2 Steps in Nation Branding

Mselle (2007) summarized numerous previous studies and compiled steps for nation branding, which are as follows:

Assess current image. Nation branding cannot change the physical characteristics of a nation; it can only attempt to change public opinion regarding the nation. Therefore, understanding current public opinion on a nation is critical.

Nation branding changes the perception of the nation among consumers and the public. A government must invest in nation branding and examine other nations' beliefs regarding the nation and its products. It must discard negative factors and strengthen positive approaches. The following four key factors are suggested for assessing a nation's image: nation popularity, communication channels through which information (whether favorable or unfavorable) is received, or simply whether the nation has a negative image. A composite analysis of these factors can assist with establishing the exact nature of the problem, i.e., the national image (Domeisen, 2003; Fan, 2006; Anholt, 2006).

Create a team. Both government and civil organizations must actively participate in the nation branding process. The government should lead the process, and the team should include members in the fields of media, education, sports, and arts. If the scope is expanded beyond this primary team, the general public should also be included (Domeisen, 2003; Quelch & Jocz, 2004; Cromwell & Kyriacou, 2007).

Determine nation's competitiveness. In national branding, a nation's competitiveness comprises the characteristics that distinguish it from and are superior to other nations. A nation's competitive advantages can be found in its people and culture, whereas its market power can be found in its infrastructure, people, image, quality of life, and tourist attractions. Lastly, competitiveness can be found from aspects of the national character, including the nation's values, culture, history, environment, resources, economy, and the experiences of its people (Porter, 1990; Gilmore, 2002; Gudjonsson, 2005).

Identify target audience. During the process of identifying the target audience, the perspectives of both foreign and domestic audiences should be considered. The process should integrate the intended targets of nation

branding, such as trading partners, export markets, political allies, cultural partners, visiting students, and business travelers (Fan, 2006; Anholt, 2006).

Construct brand identity. A nation often has contradictory characteristics. The foreign perception of a nation is often unfocused; therefore, determining the national identity is often viewed as the most complex task (Domeisen, 2003; Florek, 2005; Fan, 2006; Gould & Skinner, 2007; Wilder, 2007).

Develop core message. Clarifying the values of a national brand to the target audience involves providing a simple, clear, and brief description of the meaning of the national brand that is based on shared values of the nation (Olins, 1999; Lodge, 2002; Domeisen, 2003; Mihailovich, 2006).

Assess brand building readiness. Nation branding is a long-term process that requires both time and financial resources. Five to twenty years and an immense financial commitment are required. For example, New Zealand spends approximately US\$360 million annually (Domeisen, 2003; Endzina & Luneva, 2004; Anholt, 2006).

Establish steps and framework for nation branding. Although there is no evidence of correlations between key activities, the steps and plans proposed by Olins (1999) and Domeisen (2003) can be referenced in establishing a framework for nation branding. Olins (1999) proposed seven steps in the nation branding process: create a work team, assess the nation's image, assess the nation's advantages and disadvantages, identify a core concept, develop an image, coordinate information, and develop a communication system.

2.3 Nation Branding Experiences of Benchmark Nations

To date, South Korea, Japan, Thailand, the United Kingdom, Ireland, Malaysia, Australia, New Zealand, Germany, and France each have promoted their own national brands based on their advantages and unique styles and characteristics. For example, Japan proposed the Japan Brand strategy, with the slogan "Cool Japan", to shape Japan as a high quality, refined brand through its knowledge innovations and development of advanced technologies. South Korea employed a categorized guidance method to actively encourage development of the national brand. The United Kingdom, based on its domestic creative industries and world-class academic institutions, advanced its innovative and creative abilities and successfully developed the "Create UK" strategy. Along with Taiwan, who has tried to gain a seat in the United Nations, these are all examples of countries that actively developed a national brand (Tseng, 2008).

New Zealand. New Zealand was the first country to enact a national branding bill that called for a large-scale national marketing campaign. In 1999, the government invested US\$410 million in the "100% Pure New Zealand" advertising campaign, which lasted for two years. As a result of the campaign, foreign visitors to New Zealand increased by 53% and wine exports increased by 700%. In 2003, New Zealand implemented a second initiative named "New Zealand, New Thinking," aimed at cultivating its future industrial innovations.

South Korea. After the Asian economic crisis in 1997, the South Korean government was able to recover economic stability quickly and developed "Dynamic Korea" as the slogan for its national brand. To systematically manage its national brand and to help the national brand match the nation's overall level of development, the Presidential Council on Nation Branding was created in 2009. Its objectives were to improve South Korea's image and international standing. The Council was an integration and coordination department directly led by the President that oversees five subcommittees. Its members included the ministers of eight government agencies such as the Ministry of Strategy and Finance and the Ministry of Education, Science, and Technology and other key government officials such as the Mayor of Seoul and the President of the Korea Tourism Organization. The Council also oversees a business support group that includes bureaus involved with comprehensive planning, corporate information, external cooperation, and culture and citizens. The Trade Promotion Agency and CEOs of well-known private enterprises such as Samsung and Hyundai are subordinate to these bureaus. In addition, the Council and the Samsung Economic Research Institute cooperated to develop a nation brand index. The index annually conducts surveys and publishes these results to communicate the development status of South Korea's national brand (National Development Council, 2014).

Buatan Malaysia. The "Britain in Malaysia" campaign was an attempt to improve Malaysia's national brand and its goal was to encourage investment and trade with the United Kingdom. A UK company operating out of Malaysia sponsored the campaign slogan "Just Between Friends." "Malaysia, Truly Asia" was the slogan for the tourism component and promoted Malaysia as the most beautiful destination for Asians (Lee, 2010). The slogan "Malaysia, Truly Asia" implied quality, excellence, and innovation. It emphasized the Malaysian spirit, that this was the national brand created by the Malaysians. In addition, Malaysia specifically created unique characteristics in its products and services and promoted export of its domestically branded products to global markets. This created a positive quality image for the nation. The combination of governmental policy directions

and industry efforts increased Malaysia's international visibility and their national brand was well-received.

United Kingdom. The source of power behind the United Kingdom's creative industries is its world-renowned creativity and innovation. Based on the performance of these cultural and creative industries, the United Kingdom created the world-renowned "Create UK" national brand. The framework for promoting the United Kingdom's national brand began with Panel 2000. Established in 1998, this strategy team defined general directions for policies. In 2002, the Public Diplomacy Strategy Board was established to promote policies. It was led by federal agencies that guided and integrated the resources of various ministries and departments for a unified effort in nation branding. The Public Diplomacy Strategy Board was disbanded in 2006 and replaced by the Public Diplomacy Board. Government officials from various departments including the British Tourist Authority, under the jurisdiction of the Department for Culture, Media and Sports, the Department for International Development, and UK Trade and Investment formed a team to provide specific public diplomacy strategies to the newly formed Public Diplomacy Board. In recent years, diplomacy activities related to United Kingdom's national image have been sponsored by the Cabinet Office (National Development Council, 2014).

Germany. Germany launched an extensive promotional campaign during the 2006 FIFA World Cup to improve its national brand and to overhaul its image as a result of World War II. The campaign's slogan, "The Land of Ideas," emphasized a new and exciting future and Germany expended considerable effort to eliminate existing stereotypes. The campaign was run by a committee whose members came from both private and public sectors: the head of the Federation of German Industries acted as the executive director and the Minister of Foreign Affairs and Economy was a board member. The agency FC Deutschland was established for the sole purpose of promoting public awareness of Germany and improving its international image (Lee, 2010). Germany committed to developing the "Made in Germany" brand and it won praises from domestic and international clients and consumers.

France. France developed numerous programs and events to maintain its positive image, which was constructed through its arts and fashion. Alliance Française is a non-profit private organization founded in 1883 under the Ministry of Foreign Affairs. It has established 130 cultural centers in 127 countries and has been at the forefront of France's promotional endeavors. France 24 is a 24-hour news channel that has improved France's image by highlighting its sophisticated culture and advances in its high-tech industries (Lee, 2010). France's national brand is acclaimed for being stylish because of France's advanced industrial technologies and emphasis on innovative R&D.

South Africa. In South Africa, brand is another word for reputation, which determined what people perceive the nation. South Africa has attempted successfully established their national brands through tourism, investment and national pride. Majority of companies hired a marketing company to design a fancy slogan with its national flag to promote its visual image (Ngozika Amalu, 2016). A counsel was designated to promote the national brand concept. It spent IMC's annual budget the year it was created was R50 million, at its peak in 2010/2011 it was R170 million, due largely to preparations for the 2010 FIFA World Cup, by 2011/2012 the budget stood at R140 million. South Africa ranks Brand South Africa as the 31st strongest brand among 100 nation brands for the year 2012.

New Zealand's "100% Pure New Zealand," South Korea's "Dynamic Korea," Malaysia's "Truly Asia," the United Kingdom's "Create UK," Germany's "Land of Ideas," and France's fashion culture elicit impressions of culture and arts, romance and elegance, as well as style and fashion. These nations defined the characteristics of their national brands based on different industries.

✓ **South Africa.** "Proudly Made-in Africa" and "Value-Added in Africa"

2.4 Learning from the National Branding Processes of Benchmark Nations

The following key development points were summarized from an examination of nation branding policies enacted by the benchmark nations:

- (1) In attempting to promote a national brand, most nations promoted the positions of the decision makers. The government took responsibility for creating a platform for coordinating resources and for communications. It guided interdepartmental policies, proposed suitable response strategies and specific plans, and adopted effective nation branding strategies. In addition, the government coordinated private resources so that all parties could mutually assist one another in creating a comprehensive strategy system for the national brand. In other words, a national brand was jointly developed through the integration and use of resources. In Malaysia for example, the national branding team (which included brand building professionals, technical experts, and expert consultants) assisted in the development and promotion of a cross-industry brand.

- (2) Based on which industries had the most advantage or most unique characteristics, governments identified a specific industry or industries for promotion through government investments and amassing the resources from the private sector. By strengthening the target industry's characteristics and advantages and committing to core values such as R&D and innovations, the national brand was stimulated through advantages in technology. Because all nations value and emphasize personnel training and investing funds to create competitive advantages, all nations can create a unique and distinctive national brand. For example, the United Kingdom's output value for creative industries is particularly high because this nation's citizens continually seek new ways of doing things in their daily lives. More importantly, they eagerly challenge everything and do not bow to authority. Accordingly, they stand at the forefront of innovation and invention to lead the world forward.
- (3) Widespread recognition of a national brand requires long-term promotional activities and marketing. Governments have allocated extensive funds for national promotional activities or for advertising in international media to improve their national image. Diverse and distinct varieties of media outreach methods have been used. In their quest for a higher international ranking of their national brand, some nations segmented the market. They promoted all key areas of their national brand, using different media to convey different messages in different countries. They rapidly boosted international awareness of their national brand and attracted global attention. This had the effect of promoting their national brand and allowed them to achieve their objective of nation branding. For example, Germany took advantage of the 2006 FIFA World Cup to launch a promotional campaign to build its image and national brand. This campaign, which cost 20 million EUR, was jointly funded by the German federal government and the business community.

3. Research Methodology

3.1 Research Methods and Tools

To construct a mechanism to explore Taiwan's nation branding, the criteria were chosen in two stages: (1) expert interviews and (2) analytic hierarchy process (AHP). Expert interviews comprised in-depth interviews with scholars and experts to identify and evaluate dimensions and criteria of Taiwan's nation branding. AHP was used to confirm these dimensions and criteria and their relative weights.

3.2 Expert Interview

An expert interview is a discussion between a researcher and a participant conducted for a specific purpose. It emphasizes the participant's perception of self and a description of the participant's life and experiences. Through this dialogue, a researcher can obtain, understand, and interpret the participant's beliefs about social reality (Minichiello et al., 1995).

In this study, interviews were conducted with scholars and experts in the field of nation branding for the purpose of identifying dimensions of Taiwan's national brand.

3.3 Interview Procedure

- (1) Define expert qualifications: Qualified experts were defined as professionals in government or academic sectors with knowledge of or experience with nation branding.
- (2) Draft interview outline: Based on the research objectives, an outline for unstructured (open) discussions was drafted as a guideline for the actual interviews. Experts were asked to provide their subjective opinions and evaluations of national brand dimensions.
- (3) Results of the interviews were organized and summarized to compile expert evaluations and opinions of the dimensions and criteria of the national brand.

3.4 Expert Representativeness

The interview participants were government or academic experts with knowledge of or experience with nation branding. Two government officials (a section chief from the Ministry of Economic Affairs' Bureau of Standards, Metrology, and Inspection and a supervisor from the Ministry of the Interior's National Immigration Agency) and one scholar (an assistant professor in university's department of business) were interviewed.

3.5 Interview Outline

- (1) Defining the Taiwan brand: A national brand is an intangible asset that can have a tremendous effect on various aspects of a nation: politics and economy, attractiveness to new businesses or investments, tourism, and even product and labor pricing. The Taiwanese government promoted a plan to define the national

brand and acted as a catalyst to considerably improve Taiwan's industries and industrial image.

- (2) Evaluate dimensions and criteria of Taiwan's national brand: Propose evaluation dimensions and standards for Taiwan's national brand in the next stage.
 - (a) Propose metrics for exports because the country of origin effect can enhance the perception of a nation's goods and services.
 - (b) Propose metrics for governance that assess level of respect for citizens and perceived competence in the areas of international peace, safety, and the environment.
 - (c) Propose metrics for culture that assess the popularity of the nation's historical legacies and contemporary culture.
 - (d) Propose metrics for citizenry that assess the citizen's abilities, openness, friendliness, and tolerance for different backgrounds.
 - (e) Propose metrics for tourism that assess the appeal of the nation's natural and artificial attractions to international tourists.
 - (f) Propose metrics for investment and immigration that assess the appeal of the nation as a destination for foreign businesses and students and overall international awareness of the nation's quality of life and business environment.
- (3) Suggest global positioning for Taiwan's national brand: A national brand is the sum of six dimensions: tourism, exports, people, governance, culture, and investment and immigration. In these six dimensions, Taiwan already possesses various advantages and meets the requirements for developing a national brand. Taiwan is more than qualified, and has ample opportunity, to create its own national brand.

3.6 AHP

AHP is a multi-objective decision-making technique that can be applied to fields such as economics, social sciences, and management sciences. It emphasizes using a hierarchical structure to help decision-makers gain a more thorough understanding of and thus process complex problems.

A literature review was conducted and formed the basis of the AHP procedure in this study. Twelve experts from academic institutions and government agencies were asked to assess various criteria, which were presented in a simple hierarchical structure. Pair wise comparisons of the criteria were judged on a numerical scale and matrices were constructed using the results. Expert Choice 12 software was used to calculate the eigenvector for each criterion, to rank the criteria in each tier, to determine the consistency of the pair wise comparison matrices, and to evaluate whether the consistency met acceptable standards. If so, the matrix was used as the relative weight for a criterion of Taiwan's national brand.

The dimensions and criteria of Taiwan's nation branding and the evaluation structure are shown in the figure below.

A mechanism for exploring Taiwan's nation branding was constructed after consolidating expert opinions obtained in each aforementioned stage. In this evaluation structure, the first tier comprised the dimensions of exports, governance, culture, citizenry, tourism, and investment and immigration. This conforms to the findings of previous studies. Nation branding is a national strategy that allows a nation to compete globally. Each nation must identify and develop the characteristics of its own brand based on different industries. The second tier under exports includes the following criteria: level of science and technology development, improvements in product quality, and product R&D capability. The second tier under governance includes the following criteria: government competence and trust in the government, integrity of institutions, and fulfillment of responsibility as global citizens. The second tier under culture includes the following criteria: historical heritage, traditional culture, and contemporary culture. The second tier under citizenry includes the following criteria: professional human resources, and tolerance for different cultures. The second tier under tourism includes the following criteria: natural landscapes, vitality of urban life, and internationally famous attractions. The second tier under investment and immigration includes the following criteria: regulations for expatriates, degree of globalization, and respect for transnational immigrant families.

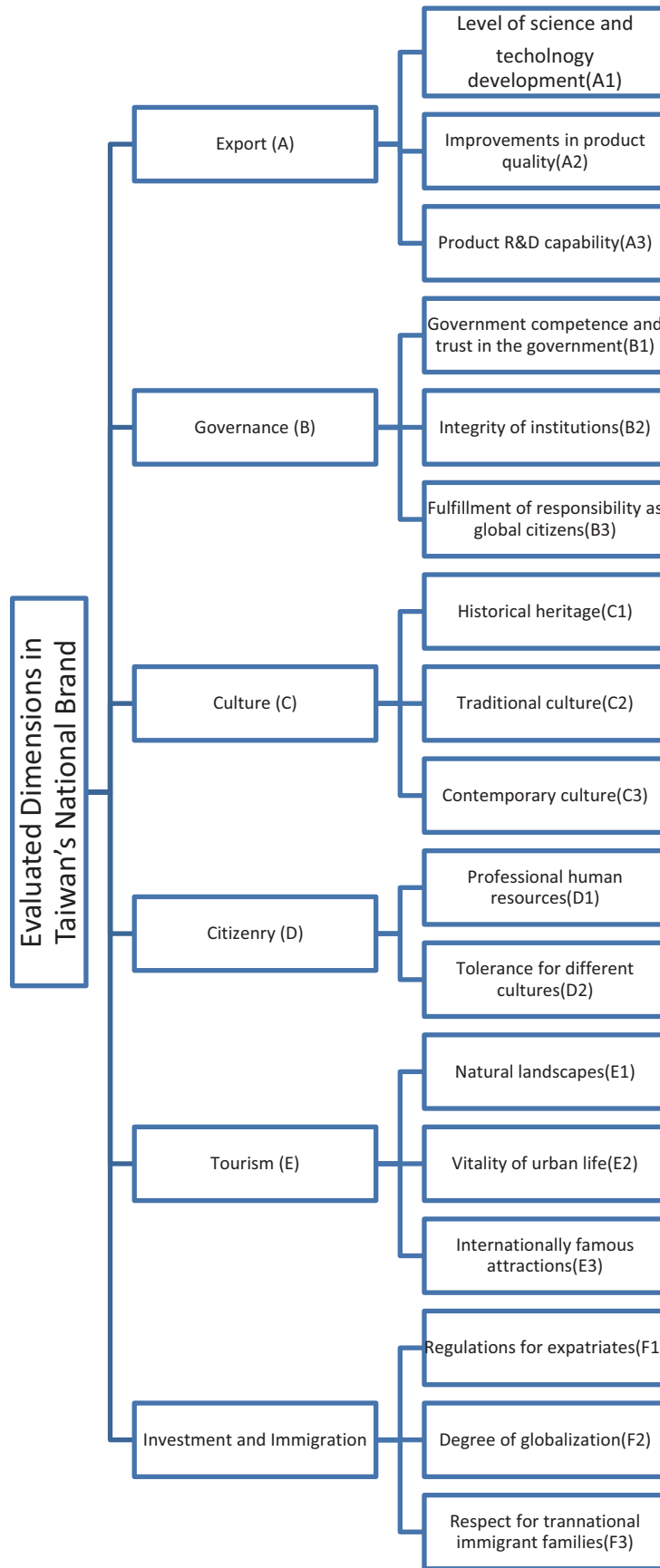


Figure 1. The dimensions and criteria of Taiwan's nation branding and the evaluation structure

3.7 Determining Relative Weights of the Criteria of Taiwan's Nation Branding

The relative weights of the dimensions and criteria were determined using the evaluations of the 12 experts who participated in the AHP stage. All surveys completed by the experts scholars showed acceptable consistency (i.e., the confidence intervals were less than 0.1). The weights of the criteria are listed in the following table:

Table 1. Relative Weights of Criteria of Taiwan's Nation Branding

Dimension	Weight	Indicator	Weight
Exports	0.130	Level of science and technology development	0.251
		Improvements in product quality	0.278
		Product R&D capability	0.471
Governance	0.146	Government competence and trust in the government	0.477
		Integrity of institutions	0.222
		Fulfillment of responsibility as global citizens	0.301
Culture	0.266	Historical legacy	0.365
		Traditional culture	0.317
		Contemporary culture	0.318
Citizenry	0.213	Professional human resources	0.399
		Tolerance for different cultures	0.601
Tourism	0.151	Natural landscapes	0.391
		Vitality of urban life	0.220
		Internationally famous attractions	0.389
Investment and Immigration	0.094	Regulations for expatriates	0.162
		Degree of globalization	0.554
		Respect for transnational immigrant families	0.284

After calculating the weights for the first tier, the ranking of dimensions from most to least important is culture (0.266), citizenry (0.213), tourism (0.151), governance (0.130), exports (0.130), and investments and immigration (0.094).

Results of the weight calculations for the second tier show that for the exports dimension, product R&D capability was most influential, followed by improvements in product quality. For the governance dimension, government competence and trust in the government, and fulfillment of responsibility as global citizens were the more important criteria among the three indicators. For the culture dimension, historical heritage was the most important criterion; traditional culture and contemporary culture were equally important. For the citizenry dimension, tolerance for different cultures was the most important criterion. For the tourism dimension, natural landscapes and internationally famous attractions were the most important criteria. For the investment and immigration dimension, degree of globalization and respect for transnational immigrant families were the most important criteria among the three indicators.

4. Conclusion and Suggestions

According to a literature review, different scholars and experts have different opinions regarding national brands. Therefore, the theory of national brands according to scholars such as Anholt (2003) was chosen as the basis for this study and for the development of relevant guidelines. The evaluation structure of the criteria of Taiwan's nation branding was successively constructed through expert interviews and AHP and the relative weights for each dimension and criterion were calculated. Results showed that the dimension culture was most influential to Taiwan's national brand. And within this dimension, the criterion historical heritage was most crucial. Next, the influence of the citizenry dimension and its indicators cannot be underestimated in Taiwan's nation branding. This is illustrated by the Chinese old sayings "People are the key component to a nation and a nation's foundation relies on its people." A nation's people, like its sights and attractions, forms a country's facade and are the basis of a visitor's first impression of the nation. Typically, friendly, polite, and kind attitudes are most appreciated and most effective for improving a nation's image.

People worldwide believe that intellectual assets such as traditional heritage, historical sites, history, culture, and geography are extremely important. Countries with long histories and rich cultural heritage are naturally respected and trusted by the global community because these countries have advanced civilization in the form of intangible benefits such as ideas and inspiration as well as tangible benefits such as historical sites and works of art. Cultural and traditional assets can demonstrate a nation's cultural richness, standard of living, and national pride. For example, ancient civilizations such as China, India, and Egypt have a tremendous advantage in cultural and traditional assets. These nations can properly use these assets to create a vast output value in tourism by marketing these cultural assets.

Culture is a microcosm of human lifestyles, a record of historical evolution, and a history of human development

and civilization. It records how humans survived in their interaction with nature and tells the story of human joys and sorrows (Tu, 2006). In the 2009 Nation Brands Index Highlights Report, Anholt defined culture as the measurement of a country's heritage and its resonance with modern culture. Taiwan has a rich cultural context, unique historical background, strong industrial capabilities, and rich natural resources. Among all Chinese-speaking regions, it is the place with the most favorable cultural and creative development and fine living (Chang and Wang, 2010). Therefore, culture is Taiwan's heirloom. Taiwan is small but beautiful. It shines brightly—it not only illuminates itself, but it can cross barriers and light beacons all over the world by contributing to global cultural diversity. Culture is a key that can open global doors. Taiwan's innumerable heritage can be promoted continuously to all parts of the world, allowing more and more foreigners to like and love Taiwan through understanding, appreciating, and being inspired by Taiwanese culture.

Future criteria of Taiwan's nation branding should be based on entirely different perspectives and approaches. The steps should include promoting the shaping of a national brand, constructing the image of the national brand, achieving consensus among all sectors, and confirming the positioning of the national brand. In addition, an interdepartmental platform to promote the national brand should be created to coordinate the resources and efforts of all related departments, and mid- and long-term strategies for shaping the national brand should be drafted to make use of lateral synergies. The goal is to enhance positive global impressions and perceptions of the national brand and create value for Taiwan's national brand. Limitations and Recommendations for Future Studies.

Our suggestions for future research include using techniques such as analytic network process or fuzzy AHP as the methodology and targeting the findings of this study to develop a clearer structure and criteria for the dimension of culture. This study can serve as a reference for promoters of the national brand by providing them with more effective decisions regarding key tasks in nation branding.

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Analytical and Theoretical Perspectives on Green Human Resource Management: A Simplified Underpinning

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Abstract

This review paper creates strong analytical and theoretical frameworks for green human resource management (GHRM) literature. As green HRM is an emerging field of study it requires strong analytical and theoretical frameworks to underpin the valuable knowledge obtained by the scholars through systematic research works in this field. A review of the literature shows that strong analytical and theoretical frameworks for green HRM have yet to be emerged. Accordingly, the objective of this paper is to fill this knowledge gap considerably. This paper organizes the existing literature on the bases of 'Analytical HRM Framework' of Boxall, Purcell, & Wright (2007) and other relevant organisational theories. Ultimately this paper establishes a strong link between existing literature in green HRM and organizational theories.

Keywords: analytical perspective, green, human resource management, theoretical perspective

1. Introduction

Human resource management (HRM) is a vital field of studies and a well-recognized practice of high value. HRM is the efficient and effective utilization of employees in order to achieve goals of the organization; and it is about managing people at work, being the human side of Business Administration having policies, procedures, rules, and systems influencing employees of the organization (Opatha, 2009). In the human resource management field, there is a growing research literature on green human resource management. However, this emerging literature on green HRM is relatively diverse and piecemeal (Renwick, Redman, & Maguire, 2013; Jackson, Renwick, Jabbour, & Camen, 2011). The literature on green HRM is not only the diverse and piecemeal but also it does not have strong analytical and theoretical frameworks to underpin the valuable knowledge obtained by the scholars through systematic research works in this field except few. Renwick et al.(2013) also suggest that green HRM has considerable potential as a management research area, but that scholarly research is rather lagging behind the practice.

This paper has considered above considerations in deciding its objective. Hence, the objective of this review paper is to establish analytical and theoretical frameworks to underpin the valuable knowledge obtained by the scholars through systematic research works in green HRM.

We begin with a discussion on the methodology adopted and then we present an overview on green HRM as well as the analytical and theoretical framework used to organize the review. Next, we mapped green HRM literature under the analytical framework and corresponding theories. Last, we discuss the issues arising from our review process and offer some general conclusions about our review.

2. Methodology

In order to achieve the objective of this review the archival method was adopted by the researchers. Similar approach was used by researchers in this field (e.g: Jabbour & Santos, 2008; Renwick, Redman, & Maguire, 2008 & 2013). The specific nature and objective of this review necessarily make us to follow the archival method. This review process covers the published research articles and papers in green HRM within the period of 1994 to 2015. In order to provide a better analytical framework for this review, we have used 'analytical HRM' framework of Boxall et al. (2007). Similarly, in order to provide a sound theoretical framework for this review,

we have used system theory (open system model) (Bertalanffy, 1950), institutional theory (DiMaggio & Powell, 1983; Scott, 1987), stakeholder theory (Freeman, 1984), resource based theory (Wernerfelt, 1984; Barney, 1986a & 1986b), process theory (Whitehead, 1933; Russell, 1961; Mohr, 1982) and ability-motivation-opportunity (AMO) theory (Appelbaum, Bailey, Berg, & Kalleberg, 2000).

3. Overview on Green HRM

In order to highlight the major knowledge advancements in green HRM research, First of all, this paper summarizes key conceptual themes of the field. They include meaning of green HRM, Process Model of green HRM, Outcomes of green HRM, and Stakeholders and Performance of green HRM. These key themes are evolved throughout the process of knowledge creation in green HRM and also going to shape the green HRM research domain in the future.

4. Meaning of Green HRM

There are few scholars defined the meaning of green HRM in the existing literature. According to Renwick et al. (2008), the integration of Corporate Environmental Management into Human Resource Management is termed as green HRM. These scholars broadly specified that distinguished policies in the field of recruitment, performance management and appraisal, training and development, employment relations and pay and reward are considered powerful tools for aligning employees with an organization's environmental strategy. In 2013, these scholars again very shortly defined green HRM as the HRM aspects of environmental management.

According to Jabbour, Santos, & Nagano (2010), the 'greening' of functional dimensions of human resource management such as job description and analysis, recruitment, selection, training, performance appraisal and rewards is defined as green HRM. In 2011, Jabbour again defined green HRM as 'the level of greening of human resource management practices' in terms of functional and competitive dimensions of HRM.

These definitions do not have significant differences or contradictions with each other. Therefore, based on the meaning of these definitions, we propose our own definition for green HRM in this juncture. Green HRM can be defined as 'the environmental (green) orientation of all human resource management (HRM) functions or practices of an organization at all levels'. The green HRM deals with rethinking the basic concepts of HRM, its objectives, functions, processes, activities, and strategies in an environmentally friendly manner in order to accommodate the needs of ecological sustainability. Green HRM refers to the policies, practices and systems that make employees of the organization green for the benefit of the individual, society, natural environment, and the business (Opatha & Arulrajah, 2014).

5. Needs for Green HRM

Organisations need green HRM for several reasons. According to the existing literature, there are many reasons. They are listed below with respective author(s).

- To protect the ecological aspects or environment (ecological lessons: e.g.: global warming, climate change, energy crisis, etc.) and to make work meaningful and the workplace safe/healthy within and outside the organisations (Shrivastava, 1994).
- To educate, train and motivate (financially or non-financially) employees to conduct their activities in an environmentally responsible manner (Shrivastava, 1995).
- To provide environmentally friendly products and operations (companies face increasing pressures for eco-friendly products and operations), to manage corporate environmental programs in successful manner (without failure) and to overcome implementation challenges of corporate environmental programs (Milliman & Clair, 1996).
- To support the success of environmental activities of the companies (Wehrmeyer, 1996).
- To provide proactive corporate environmental management because employees are one of the major forces in proactive corporate environmental management and to train, recognize, reward and motivate employees in proactive corporate environmental management (Berry & Rondinelli, 1998).
- To achieve sustainability (achieving sustainability will require not only attention to the technical aspects of systems but also the HR factor) and to succeed (avoid failure) in corporate environmental management efforts (Daily & Huang, 2001).
- To innovate eco-friendly aspects such as products and behaviour (employee eco-innovation) (Ramus, 2002).
- To increase or improve corporate environmental performance (Govindarajulu & Daily, 2004).

- To increase or improve corporate environmental performance by certain HR functions such as training, employee empowerment, and Environmental Management System (EMS) rewards (Daily, Bishop, & Steiner, 2007).
- To become green employer (Phillips, 2007; Stringer, 2009).
- To develop sustainable organizations (Jabbour & Santos, 2008).
- To contribute to implement all the stages of environmental management system (ISO 14001) in the companies (Jabbour et al., 2010).
- To implement Cleaner Production in the organisations in a successful manner (Cleaner Production is unrealistic without the support of human resources) (Neto & Jabbour, 2010).
- To sustain corporate environmental performance or to ensure sustainable environmental performance in a long term basis (Jabbour, 2011).
- To motivate employees, to become involved (employees) in corporate environmental management activities and to develop green abilities and provide employees with opportunities to be involved in corporate environmental management initiatives and efforts (Renwick et al., 2008 & 2013).
- To create, enhance and retain greening within each employee of the organization so that he or she gives a maximum individual contribution on each of the four roles, i.e., preservationist, conservationist, non-polluter, and maker (Opatha & Arulrajah, 2014).

The above mentioned reasons necessitate that organisations do engaged in practicing green HRM. Green HRM makes employees of the organization green so that they reduce or eliminate wastes and then reduce overall costs of the organization. Also they tend to innovate environmentally friendly goods or services. Thus the organization will be able to gain improvements in productivity, talent acquisition, employee retention, reputation, customer loyalty, and market expansion resulting in enhancing organizational competitiveness. Organisations cannot practice green HRM without a system or processes. In practicing green HRM in an organisation, HRM functions provide appropriate mechanism and processes. Therefore, organisations need a functional or process model of green HRM.

6. Process Model of Green HRM

In general, organisations commenced to practice green HRM practices before 1980s. However, most of scholarly works were initiated after 1990s in HRM. Renwick et al. (2008) proposed a process model for green HRM with a set of green HRM practices under the five functions or activities of HRM such as recruitment, performance management and appraisal, training and development, employee relations, and pay, reward and exit. They classified the literature in a process model format of HRM by using collected publications from 1988 to 2008. Many scholars have contributed to this process model formation (e.g: Anthony, 1993; Barrett & Murphy, 1996; Bird, 1996; Brio, Fernandez, & Junquera, 2007; Daily & Huang 2001; Fernandez, Junquera, & Ordiz, 2003; Govindarajulu & Daily, 2004; Phillips, 2007; Ramus, 2001; Ramus & Steger, 2000; Wehrmeyer, 1996; Wolters, Bouman, & Peeters, 1995; Jabbour, Santos, & Nagano, 2008).

7. Outcomes of Green HRM

Practicing green HRM in an organisation will produce many outcomes. Green HRM has various outcomes at various levels. It directly influences the workforce of the organisation and tries to develop an environment-friendly culture within the organisation. The outcomes of green HRM can appear in different forms. It may be employee related outcomes such as environment-friendly workforce, employee with environmental related knowledge, skills, and attitudes or it may be the financial gains such as cost saving or waste reductions. Ultimately it may contribute to firm's environmental performance and image or goodwill as well as legal and standard or system compliance. The existing literature on green HRM has evidence for all these outcomes.

Effective and successful environmental management requires decisive contributions from human resource management of an organisation or HRM functions can decisively contribute to successful environmental management in an organisation (Daily & Huang, 2001; Rothenberg, 2003; Govindarajulu & Daily, 2004; Muster & Schrader, 2011).

Jabbour and Santos (2008) stated that the development of cleaner technologies requires human resource management to perform an active role. Being aware of the environmental strategy of a company, it has to provide the competencies needed for the continuous improvement of the environmental performance.

For our review purpose we termed all these positive gains of green HRM as 'outcomes of green HRM' but it

may be at different levels such as individual employee level, team level, department level, management level, overall organisational level and national or international level. The following Table 1 shows reasons for green HRM, outcomes of green HRM, and different levels.

Table 1. Reasons for Green HRM and its Outcomes at Different Levels

	Reasons for Green HRM (Why)	Outcomes of Green HRM	Levels
1	To protect the ecological aspects or environment (Ecological lessons: e.g. global warming, climate change, energy crisis, etc.) (Shrivastava, 1994).	Environmental Protection	Organisational or National or International
2	To make work meaningful and the workplace safe/healthy within and outside the organisations (Shrivastava, 1994).	Workplace Health and Safety	Organisational
3	To educate, train and motivate (financially or non-financially) employees to conduct their activities in an environmentally responsible manner (Shrivastava, 1995).	Environmentally Educated, Trained, and Motivated workforce	Employee/workforce
4	To provide environmentally friendly products and operations (companies face increasing pressures for eco-friendly products and operations) (Milliman & Clair, 1996).	Environmentally friendly products and operations	Organisational
5	To manage corporate environmental programs in successful manner (without failure) (Milliman & Clair, 1996).	Success in corporate environmental programs	Organisational
6	To overcome implementation challenges of corporate environmental programs (Milliman & Clair, 1996).	Success in implementing corporate environmental programs	Organisational
7	To support the success of environmental activities of the companies (Wehrmeyer, 1996).	Supportive workforce for environmental activities	Employee/workforce
8	To provide proactive corporate environmental management because employees are one of the major forces in proactive corporate environmental management (Berry & Rondinelli, 1998)	Proactive corporate environmental management	Organisational
9	To train, recognize, reward and motivate employees in proactive corporate environmental management (Berry & Rondinelli, 1998).	Environmentally Trained, Recognized, Rewarded and Motivated workforce	Employee/workforce
10	To achieve sustainability (achieving sustainability will require not only attention to the technical aspects of systems but also the HR factor) (Daily & Huang, 2001).	Sustainability through HR	Organisational
11	To succeed (avoid failure) in corporate environmental management (EM) efforts (Daily & Huang, 2001).	Successful corporate EM efforts	Organisational
12	To innovate eco-friendly aspects such as products or behaviour (employee eco-innovation) (Ramus, 2002).	Eco-innovation in terms of products and behaviour	Organisational and Employee/workforce
13	To increase or improve corporate environmental performance (Govindarajulu & Daily, 2004).	Environmental performance	Organisational
14	To increase or improve corporate environmental performance by certain HR functions such as training, employee empowerment, and EMS rewards (Daily et al., 2007).	Environmental performance	Organisational
15	To become green employer (Phillips, 2007).	Green employer	Organisational
16	To develop sustainable organizations (Jabbour & Santos, 2008).	Sustainable organization	Organisational
17	To become green employer (Stringer, 2009).	Green employer	Organisational
18	To contribute to implement all the stages of environmental management systems (EMS-ISO 14001) in the companies (Jabbouret al., 2010).	Success of EMS	Organisational
19	To implement Cleaner Production in the organisations in a successful manner (Cleaner Production is unrealistic without the support of human resources) (Neto & Jabbour, 2010).	Successful implementation of Cleaner Production	Organisational
20	To sustain corporate environmental performance or to ensure sustainable environmental performance in a long term basis (Jabbour, 2011).	Sustainable environmental performance	Organisational
21	To motivate employees (Renwick et al., 2013).	Environmentally motivated workforce	Employee/workforce
22	To become involved (employees) in corporate environmental management activities (Renwick et al., 2013).	Employee involvement in Environmental Management	Employee/workforce
23	To develop green abilities and provide employees with opportunities to be involved in corporate environmental management initiatives and efforts (Renwick et al., 2013).	Green abilities	Employee/workforce
24	To create, enhance and retain greening within each employee of the organization so that he or she gives a maximum individual contribution on each of the four roles, i.e., preservationist, conservationist, non-polluter, and maker (Opatha & Arulrajah, 2014).	Green employee roles	Employee

8. Stakeholders and Performance of Green HRM

Until now, there is a lack of direct literature on stakeholders of green HRM and performance of green HRM. Four major stakeholders: employer, employee, customer and supplier are responsible for green HRM. In order to earn profits the employer does production of certain goods or services which more likely damage, waste and use the natural environment. In order to receive various financial and non-financial rewards the employee engages in performance of a particular job which more likely damages, wastes, and uses the natural environment. Indeed mainly the employer, who invested his or her capital to produce a product, is responsible for all resultant damages done to, wastes added to, and uses of the nature or natural environment. Then managers and non-managers are responsible for damages, wastes, and uses in respect of the nature or natural environment. Employees are human beings and when they become green seriously they will significantly contribute to preserve, conserve, and protect the natural environment.

The benefits or advantages of green HRM are for all including current as well as future generations. Green HRM has really expanded the current stakeholders' boundaries of HRM. Stakeholder engagement is a key factor in determining the performance of green HRM. According to Renwick et al.(2013), organisations do not use the full range of green HRM practices, and this may limit their effectiveness in efforts to improve environmental management. We assert that the effective performance of green HRM in terms of scope (full range of green HRM practices) and depth (intensity of green HRM practices) improve environmental performance of the organisations.

So far our review has dealt with major knowledge advancements in green HRM research. Up to this level, this review has explored about the meaning of green HRM, needs for green HRM, process model of green HRM, outcomes of green HRM and stakeholders and performance of green HRM. Now we will move to the next key area of our review, i.e. analytical and theoretical frameworks for green HRM.

9. Analytical and Theoretical Frameworks for Green HRM (GHRM)

Several theories that emerged from the organisational management and human relations domain influence the discussed themes of green HRM (meaning of green HRM, process model of green HRM, outcomes of green HRM, and stakeholders and performance of green HRM). They are institutional theory, system theory, process theory, stakeholder theory, resource based theory and ability-motivation-opportunity (AMO) theory. The researchers hope that exploring the key themes (concepts) which related to the green HRM in the light of existing as well as selected (relevant) theories will add more sensations and understanding to the field of green HRM.

This section of this paper investigates and reviews theories which are underpinning the concept of green HRM related phenomena such as meaning of green HRM, Process Model of green HRM, Outcomes of green HRM, and Stakeholders and Performance of green HRM. For this purpose, this review process has selected highly relevant and applicable organisational theories such as system theory (open system model) (Bertalanffy, 1950), institutional theory(DiMaggio & Powell, 1983; Scott, 1987), stakeholder theory (Freeman, 1984), resource based theory (Wernerfelt, 1984; Barney, 1986a & 1986b), process theory (Whitehead,1933; Russell, 1961; Mohr, 1982)and ability-motivation-opportunity (AMO) theory (Appelbaum et al., 2000) from the perspective of 'analytical HRM'. Boxall et al. (2007) consider the notion of 'analytical HRM' as an activity which has as its primary task the building of theory and the gathering of empirical data to support it. They identify three characteristics of this analytical approach to HRM.

First is concerned with the '*what and why*' of HRM ('*what and why*' of green HRM); it is about the understanding of what management tries to do with work and people in different contexts and with explaining why. For this purpose this review goes on applying institutional theory, resource based theory, and system theory.

Second is concerned with the '*how*' of HRM ('*how*' of green HRM); it is about the processes through which it is carried out. For this purpose this effort attempts to apply process theory, system theory and institutional theory.

Third is concerned with questions of '*for whom and how well*'; with assessing the outcomes of HRM, taking account of both employee and managerial interests, and laying a basis for theories of wider social consequences. For this purpose this study applies stakeholder theory and ability-motivation-opportunity (AMO) theory.

9.1 What and Why of Green HRM

In this review process we have already answered what green HRM is and why organisations need green HRM from the existing literature. However in this section, we stress that our answers come under the analytical framework of HRM. The evolved literature about the meaning of green HRM and needs for green HRM as well as outcomes of green HRM falls into the first characteristic of the analytical HRM framework developed by

Boxall et al.(2007). Therefore, analytically it has been proved that the knowledge which has been produced so far under the meaning of green HRM, needs for green HRM (why) as well as outcomes of green HRM has a strong analytical framework.

In order to indicate that, the knowledge which has been produced so far under the meaning of green HRM and needs for green HRM (why) as well as outcomes of green HRM has a strong theoretical framework, an attempt is made here to apply *institutional theory, resource based theory, and system theory*. The key question here is “why is green HRM?”. The following discussion will provide adequate explanations from the perspectives of *institutional theory, resource based theory and system theory*.

Institutional Theory suggests that external pressures shape organizational action. Applied to the natural environment, most institutional studies have emphasized the effects of coercion from regulatory and social pressures and how they encourage homogeneous outcomes (e.g. Russo & Fouts, 1997). However, a criticism of institutional theory is that it often radiates organizations as passive participants that respond to institutional expectations (Perrow, 1986; Oliver, 1997). Any how this theory provides a base for why green HRM is important for an organisation.

As a theory, institutionalization fits clearly with the assumptions of the ecosystems perspective. A focus on the importance of the perceptions of those living in controlled environments, in addition to the objective conditions themselves, suggests the relevance of a social constructionist perspective as well. Ecosystems introduce the construct of goodness-of-fit, the extent to which there is a match between an individual’s needs, rights, goals, and capacities and the qualities of his or her physical and social environment (Germain & Gitterman, 1995, p. 817; Greene, 1999, p. 299). If there is no fit, then initiatives are needed to ensure the good fit. One such permanent initiative is greening of HRM in an organisation. Institutionalization theory suggests that, the mismatch, or lack of goodness-of-fit between residents and their institutional environment is the primary cause of the syndrome of institutionalism. Therefore it is clear that according to the institutional theory, due to external pressures (regulatory and social pressures) green HRM is needed for every organisation nowadays. That is why this review underpins the meaning of green HRM and needs for green HRM in the light of institutional theory from the external perspective.

At the same time Resource Based Theory (RBV) suggests that resources that are specialized and non-replicable create opportunities for heterogeneity leading to competitive advantage (Wernerfelt, 1984). Business strategy or even environmental strategy therefore depends on specific organizational competencies and on a firm’s ability to put them to routine productive use and maintain them over time (Wernerfelt, 1984). Applied to the environment, achieving greater level of internal environmental competency is a function of an organization’s basic environmental capabilities such as pollution prevention(Hart, 1995). Sustaining these competencies depends on whether a firm continually improves its internal operations (Russo & Fouts, 1997; Sharma & Vredenburg, 1998) and invests in employee over capital (Hart, 1995). Organizations that adopt environmental strategies without these basic-level competencies are less likely to achieve their strategic goals (Christmann, 2000). That is why this review highlighted the outcomes of green HRM at employee level (employee green attitude, employee green competence and employee green behaviour) to enhance overall outcome of the organisation (organization’s environmental performance). Therefore, according to the resource based view green outcomes of workforce are critical from the internal perspective. Hence, this review underpins the theme of outcomes of green HRM in the light of resource based theory from the internal perspective. Moreover, the RBV states that resources which are valuable, rare, inimitable and imperfectly substitutable are the main source of an organisation’s competitive advantage (Wernerfelt, 1984; Barney, 1991; Bowman & Ambrosini, 2000; Lockett, Thompson, & Morgenstern, 2009).

A number of authors have applied the RBV to the field of strategic HRM (Wright, McMahon, & McWilliams, 1994; Wright, Dunford, & Snell, 2001) but not in the field of green HRM. The authors who applied in strategic HRM suggest that the knowledge, skills and activities of the workforce are core resources that contribute to the firm’s competitive advantage. Similarly we argue that green attitude, green knowledge, green skills, and green behaviour of employees are main resources that contribute to the organization’s environmental performance.

The importance of green HRM in achieving environmental performance of an organisation has potential to receive considerable attention in the RBV literature. According to Penrose (1959) and Lockett et al. (2009), the value creation from the use of resources depends on the way that these resources are developed and deployed within the organisations. Therefore, in the green HRM context, the green attitude, green knowledge, green skills, and green behaviour of employee are needed in order to create environmental value from other resources.

In this context, the green HRM functions are more essential in order to maximize green outcomes of HRM

created through the effective development and deployment of people within the organisation. Indeed, we argue that the level of greening of HRM functions will determine the level of employee contribution and organization's environmental performance.

From the perspective of green HRM literature, we argued that all HRM functions have the potential to become as green HRM functions and to produce environmentally friendly workforce and green organisational capabilities which are critical to achieving environmental performance of an organization (Arulrajah, Opatha, & Nawaratne, 2015). In the sense that it can have an impact on the environmental performance of the organisation, we can also treat the green HRM functions themselves as resources.

The framework of this review applies the System Theory (open system model) and also adds a new insight from the perspective of green HRM. Katz and Kahn (1978) apply the concept of open system to the organization. The organization is seen as a system built by energetic input-output where the energy coming from the output reactivates the system. A traditional theoretical approach corresponding to this study conceptualization roots on the general system theory that likens organizations to biological organisms (Katz & Kahn, 1978).

Within the framework of system theory, human resource management can be viewed as a subsystem that exchanges information and energy with the environment to attract, develop, motivate, and retain employees who ensure the effective functioning and survival of the organization (Jackson & Schuler, 1995). Serving these purposes, green HRM related policies and practices can be used as tools to strengthen outcomes of green HRM and ultimately lead to organization's environmental performance. Furthermore, human resource management is required to serve the organization's strategic goal in terms of maintaining a good personnel structure, achieving optimal skill and knowledge combinations, and keeping labor costs acceptable. On this front, green HRM related human resource policies and practices can be used to improve the corporate environmental image and performance.

HR managers should become familiar with the concept of systems and the integrated way of thinking. All managers have to plan structural adjustments to guarantee the survival of the whole system, constantly formulating new interpretations of the business scenarios in order to find an adequate positioning, implementing (when necessary) periods of adjustment, transformation and redefinition of the organizational structure. This adaptive and proactive behavior should be based upon systems theory conceptual pillars in order to promote sustainable and long-lasting performance. Given real-world complexity, we strongly believe and argue that systems perspective can effectively contribute to green HRM.

It is possible to mention here that the above discussion provides adequate explanations from the perspectives of three theories (institutional theory, resource based theory and system theory) in respect of "What and why of green HRM".

9.2 How of Green HRM

The second concern is about the 'how' of HRM ('how' of green HRM); it is about the processes through which it is carried out. In our review we have already answered how of green HRM from the existing literature. However in this section, we need to emphasize, that the evolved literature about the how of green HRM falls into the second characteristic of the analytical HRM framework developed by Boxall et al.(2007). Therefore, analytically it is confirmed that the knowledge which has been produced so far under the process or functional models of green HRM possesses a strong analytical framework.

For the purpose of indicating that, the knowledge produced so far under the process or functional models of green HRM (how) possesses a strong theoretical framework, process theory, system theory and institutional theory are applied in this review.

Process theory is a commonly used form of scientific research study in which events or occurrences are said to be the result of certain input states leading to a certain outcome (output) state, following a set process. Process theory seeks to explain by identifying sequences of actions that lead to outcomes if specific antecedent conditions are fulfilled (Whitehead, 1933; Russell, 1961; Mohr, 1982). In management research, process theory provides an explanation for 'how' something happens.

According to Maxwell, "Process theory deals with events and the processes that connect them; it is based on an analysis of the causal processes by which some events influence others" (2004, p. 5). A process approach requires a process-oriented conception of causal explanation, what Maxwell (2004) calls a realist causal approach, and Cook (2002) refers to as explanatory theories of cause. Maxwell asserts that (among other things): "A realistic, process-oriented approach to explanation, recognizes the explanatory importance of context of the phenomena studied, and relies fundamentally on an understanding of the processes by which an event or

situation occurs, rather than simply a comparison of situations involving the presence or absence of the presumed cause” (pp. 8-9).

Therefore, this theory provides the answer for how of green HRM. It will happen through the greening of functional dimensions of HRM (green HRM functions). For this purpose the **system theory** too supports this review. It is owing to the reason that this theory also explains how something can be materialized through taking inputs, processing and giving outputs.

According to the institutional theory, the process of institutionalization will not happen in a vacuum. Institutionalizing green HRM practices through the functional dimension of HRM has to be taken place within the organisation. For this, the process of institutionalization of green HRM needs basically two steps: (1) legitimization (normative, cognitive and coercive/legal or law aspect) at organisational level, and (2) institutionalizing of green aspects into HRM functions (formalizing). The conceptual model of this review at functional or process level is dealing with the second step in the above two steps. Therefore, these three theories (process theory, system theory and institutional theory) strengthen the themes which we discussed in this review and provide the answer for how of green HRM.

9.3 For Whom and How Well: Green HRM

The third concern is about the questions of *‘for whom and how well’*; with assessing the outcomes of HRM, taking account of both employee and managerial interests, and laying a basis for theories of wider social consequences. For this purpose stakeholder theory and ability-motivation-opportunity (AMO) theory are applied here.

The *‘for whom and how well’* of green HRM has already been approached in our review from the little literature which is available to us. The evolved little literature about the stakeholders and performance of green HRM falls into the third characteristic of the analytical HRM framework developed by Boxall et al.(2007). Therefore, the observation that the little knowledge produced so far under the stakeholders and performance of green HRM have necessitated a need for an adequate analytical framework in this research area. For this purpose stakeholder theory and ability-motivation-opportunity theory are used in this review.

To provide an answer for, *‘for whom green HRM’* can be supported in the light of **stakeholder theory**. It is because of the fact that green HRM is for all. It covers all the stakeholders (direct, indirect, internal, external, current as well as future) of the organisation. Jackson and Schuler (2003) stated that *‘the principle that effective management requires attending to all relevant stakeholders is as true for managing human resources as for other management tasks. Human resource management practices cannot be designed solely to meet the concerns of the employees. Nor can they be designed by considering only their consequences for the bottom line. Organizations that are the most effective in managing people develop HR systems that meet the needs of all key stakeholders’*. The above argument appears to be consistent with the current debate on sustainability, most commonly expressed in terms of *‘the triple bottom line’* of environmental, social and economic goals. Green HRM is for that and it must definitely meet the needs of all stakeholders. Therefore, the *‘for whom’* analysis of green HRM can be approached theoretically based on stakeholder theory.

The last aspect is about how well. The answer for this can be constructed in the light of AMO theory. It is due to the reason that how well of green HRM is dependent upon ability, motivation and opportunities in any level. It may be at individual employee/workforce level, team level, department level or at organisational level (organization’s environmental performance). While employees must have green ability to perform in green way they must have an internal state that leads to a higher degree of willingness to exert the needed effort to perform the job in green way or environment-friendly way. Also opportunities to perform in green way have to be provided to employees by their superiors and employer. As far as motivation is concerned, it is an internal state of an employee giving the meaning that it is an employee’s enthusiasm to do something seriously because he or she likes and enjoys by doing it or he or she thinks it is very important (Opatha, 2015). Hence, the employee is supposed to like *‘greening’* and enjoys by doing *‘greening’* or he or she thinks that *‘greening’* is very important. Also motivation is an activity performed by one person to stimulate another to perform successfully a duty or duties of the job to accomplish relevant established objectives (Opatha, 2015). Hence, relevant top managers of the organization should develop programmes to stimulate their subordinates to perform green duties to accomplish objectives relating to *‘greening’*. Thus, the ultimate performance of green HRM can be under the scope of AMO theory.

Next section of our review is to map the green HRM literature with the analytical and theoretical frameworks which we discussed in this section.

10. Mapping Green HRM Literature with the Analytical and Theoretical Frameworks

In order to provide strong analytical and theoretical frameworks to underpin the valuable knowledge obtained by the scholars through systematic research works in this field, mapping green HRM themes with the relevant analytical and theoretical frameworks is a key task of this review process. Table 2 illustrates how the above discussed green HRM related themes are mapped with the frameworks of analysis and theories.

Table 2. Analytical Perspective of Green HRM and Corresponding Theories

Analytical HRM/Green HRM Perspective	Corresponding Theories
What and why of green HRM <ul style="list-style-type: none"> ▪ <i>Meaning of green HRM</i> ▪ <i>Needs for green HRM</i> ▪ <i>Outcomes of green HRM</i> 	Institutional Theory Resource Based Theory System Theory
How of green HRM <ul style="list-style-type: none"> ▪ <i>Process Model of green HRM</i> 	Process Theory System Theory Institutional theory
For whom and how well: green HRM <ul style="list-style-type: none"> ▪ <i>Stakeholders and Performance of green HRM</i> ▪ <i>Outcomes of green HRM</i> 	Stakeholder Theory AMO Theory

11. Discussion

This paper is an intellectual initiation which has qualitatively substantiated that the existing literature and research works on green HRM have strong analytical and theoretical frameworks. In this review, an appropriate attempt was made to apply the relevant and suitable theories by aligning with the analytical perspective of HRM presented by Boxall et al. (2007) in order to highlight the intellectual nature of green HRM.

This review process has began with introduction which briefly highlighted the current position of existing body of green HRM knowledge and followed with methodology. Under the overview of green HRM, five main themes of green HRM were addressed. They include meaning of green HRM, needs for green HRM, process model of green HRM, outcomes of green HRM and stakeholders and performance of green HRM. In general, green HRM has several micro and macro level aspects. However, it is not possible to explain everything in a comprehensive manner here. Therefore, we have chosen above themes for our discussion in order to fulfill the indented objective of our review.

Subsequently, we introduced the analytical and theoretical frameworks for green human resource management (GHRM) in this review. The analytical HRM provides us a 3-mode of analysis which is a really useful framework not only to organize the existing knowledge of green HRM, but also to provide an analytical framework to underpin the valuable knowledge obtained by the scholars through systematic research works in this field. Similarly, the selected organisational theories were also provided as the required inputs to establish a theoretical framework for green HRM research works. Finally, this review has systematically and logically mapped summarized knowledge of green HRM with the discussed frameworks of analysis and theories. Through this mechanism, ultimately this review establishes a link between existing literature in green HRM and organizational theories.

12. Conclusion

Based on our review, we can conclude that the emerging body of knowledge in green HRM has strong analytical and theoretical frameworks. Even though its knowledge creation progress just appeared as less theoretical or a theoretically weak journey, but reality is not so. As a notable example, it is possible to indicate the scholarly work of Renwick et al. in 2013, which categorized the existing green HRM literature on the basis of Ability-Motivation-Opportunity (AMO) theory. They laid a foundation to such initiations in green HRM. Many scholars in this research field tend to be involved in integrating Human Resource Management with Corporate Environmental Management while forgetting or perhaps ignoring to internalize, explore and document the analytical and theoretical frameworks for such integration. However, this review can be considered as a logical effort that provides a contribution to a certain extent in establishing strong analytical and theoretical underpinning to the valuable knowledge obtained by the scholars through systematic research works in the newly emerged field of green HRM.

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Challenges of Innovation for Chinese Small and Medium-sized Enterprises: Case Study in Beijing

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Abstract

Innovation has been regarded as one of important impetuses to gain competitive advantages and achieve sustainable development for small and medium-sized enterprises (SMEs) in the past thirty years. However, SMEs in China have currently confronted a lot of problems impairing their innovation performance. This study aims to identify the main challenges hindering successful innovation of Chinese SMEs. Based on the previous academic studies, there are five research variables are developed and evaluated: lack of financial support, inadequate research and development (R&D) activities, the shortage of technical and skilled employees, weak entrepreneur orientation, improper governmental and legal environment. Furthermore, the primary data are collected by structured-questionnaires from 120 SMEs in Beijing. According to the research results analyzed by SPSS, it reveals that lack of financial support and inadequate R&D activities are major challenges for Chinese SMEs to achieve innovation. The shortage of technical and skilled employees as well as the improper governmental and legal environment is other barrier. Therefore, more responsibilities and actions should be taken by the government and SMEs themselves to enhance the innovation capability of Chinese SMEs. On the other hand, only one factor—weak entrepreneur orientation, is not regarded as a key challenge. This indicates Chinese entrepreneurs have increasingly realized the significant role of innovation played in the survival and long-term prosperity of SMEs recently.

Keywords: innovation performance, SMEs, China, challenges, recommendations

1. Introduction

The Chinese economy has leapt forward since the implementation of economic reform and open-door policy in 1978. China is a relative late comer to modern industry but a highly successful one. The rapid growth of dynamic SMEs is one of significant achievements of this overall macro-economic reform (Kanamori et al., 2007). Moreover, as a vital driver behind the economic boom in China, Chinese SMEs make great contributions to GDP growth and employment creation. For example, Chinese SMEs represented around 61% of national GDP and provided approximately 87% of new job opportunities in 2013 (China Statistical Yearbook, 2013). With the acceleration of economic globalization and technological revolution, companies have to renew or improve their products, services and manufacturing processes timely to acquire competitive advantages in fierce market competition (Bozkurt & Kalkan, 2014; Tajeddini, 2010). Therefore, the innovation capability as an engine of technology progress is of importance to all firms, especially for SMEs (Radas & Bozic, 2009).

On the other hand, most enterprises start their business from small or medium-sized companies. SMEs provide a breeding ground for new products and services. For instance, Chinese SMEs offered 75% of new products and 65% of invention patents in 2012 (Ma, 2012). Hence, SMEs have played an essential role in the innovation of products and manufacturing processes (Zeng et al., 2010; Bruque & Moyano, 2007). However, Chinese SMEs have showed a lot of failure experiences in regard to technology innovation, which implies many constraints still existed to hamper the innovation performance of SMEs in China (Xie et al., 2013; Diez, 2000; Banyte & Kuvylaite, 2008; O'Regan et al., 2006). Overall, it is necessary to critically identify and evaluate the challenges of innovation for SMEs in China.

2. Literature Review

2.1 Theoretical Explanation of Chinese SMEs

The criterion of SMEs in China is very complicated, which is in accordance with different industrial categories concerning the number of employees, total assets, balance sheet, business revenue and annual turnover (China Briefing News, 2011). Generally, according to the latest standard of Chinese SMEs issued by the Chinese government in 2011, the annual turnover of micro-sized enterprises is less than 3 million RMB (around 0.44 million US dollars) with less than 20 employees. The annual turnover of small-sized companies is from 3 million RMB (around 0.44 million US dollars) to 30 million RMB (around 4.45 million US dollars) with 20 to 300 personnel. Furthermore, the annual turnover of medium-sized firms is from 30 million RMB (around 4.45 million US dollars) to 300 million RMB (around 44.57 million US dollars) with 300 to 2000 staff (The Ministry of Industry of the People's Republic of China, 2012).

There are approximately 60.92 million of Chinese SMEs in 2015, occupying more than 98% of total firms (National Bureau of Statistics of China, 2015). Only in Beijing City, there were around 965,773 SMEs registered in 2006, representing around 82.92% of overall enterprises. The total number of SMEs is more than that of all of Belgium and Netherland combined. Additionally, SMEs in Beijing contributed to nearly 57% of city's revenue, around 68% of profit creation, approximately 62% of taxation income, almost 73% of employment in 2010 (Deakins & Freel, 2012).

2.2 Theoretical Explanation of Innovation

The definition of innovation is the application of new ideas and approaches to create value for enterprises and delivery value for customers, including the application of process innovation, the adoption of product innovation and the implementation of managerial and marketing innovation (Bozkurt & Kalkan, 2014; Leskovar, 2007).

Due to the high adaptability and flexibility, SMEs usually have short reaction time to a changing environment and new marketing demands (Ferneley & Bell, 2006). However, it is still very hard for SMEs to implement innovation successfully (Xie et al., 2013; O'Regan et al., 2006). There have been a number of studies and researches on analyzing the barriers of innovation for SMEs available so far. For instance, the shortage of technically skilled employees and managerial staff, and the deficient capital support are constraints of successful innovation for SMEs in manufacturing industry (Xie et al., 2013; Smallbone et al., 2003). Furthermore, the intensity of R&D activities is one of important determinants as well (O'Regan et al., 2006; Xie et al., 2013). Although some factors influencing on innovation for different companies are varying, the entrepreneur orientation is viewed as one of common aspects (Kim et al., 1993). It is worth noting that the financial resources are indispensable for business start and growth (Xie et al., 2013; Bygrave, 1992). According to Kaufmann and Todtling (2002), the adequate capital and financial support are crucial to implement innovation.

Table 1. The Challenges of SMEs Innovation

Author(s)	Description
Piatier (1984)	Lack of government support as an important barrier of innovation in the European countries
Silva, Leitão and Raposo, Vieira (2007)	Lack of financing channels Lack of skilled employees Lack of marketing information and high technology The organizational rigidity
Madrid – Guijarro Garcia and Auken (2009)	Incomplete government policies and regulations Uncertain economic environment Lack of high-quality human resources
Triwari and Buse (2007)	Low budgets Difficulty in recruiting adequate human resources Bureaucracy Poor cooperation between enterprises
Demirbas (2010)	Lack of state policies to support technology and R&D High cost of innovation Lack of appropriate approaches of raising funds Lack of qualified personnel
Kamalian, Rashki and Arbabi (2011)	Excessive business risks Insufficient economic resources Unavailability of funds Cost associated with innovation

Source: Cordeiro and Vieira, (2012); Bozkurt & Kalkan, (2014)

Moreover, the political and legal environment also impacts on the innovation implementation of SMEs to some extent. Some scholars put forward that bureaucratic burdens placed on SMEs by incomplete government policies and improper regulations might be considered as one of key challenges of innovation (Xie et al., 2013; Henrekson & Johansson, 1999). Other previous academic studies in relation to the challenges of innovation are highlighted in Table 1 as above.

These studies conclude that the innovation of SMEs is affected by the shortage of financial and human resources, the political risks as well as the inadequate R&D activities. According to the literatures above, a conceptual model is developed for this study (see Figure 1 below).

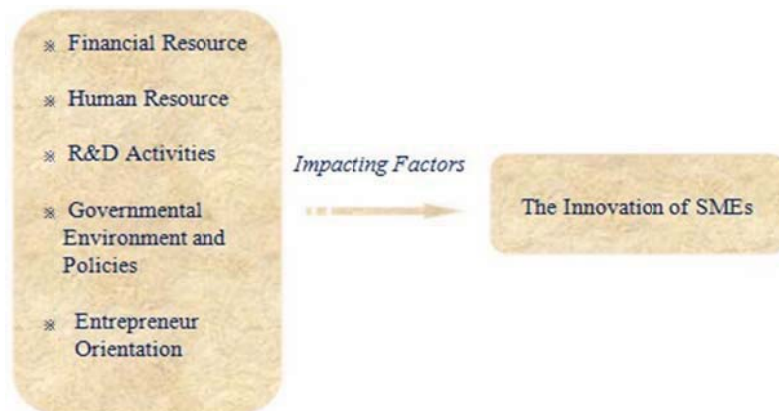


Figure 1. Conceptual Framework

Therefore, this research aims to examine these factors associated with innovation of SMEs in Beijing, China. On the basis of research findings and analysis, several appropriate suggestions are provided to improve their innovation capacity in the future.

3. Analysis and Discussion

3.1 Research Variables and Data Resources

According to the conceptual framework developed from previous studies (see Figure 1 above), five variables are mainly concentrated in this research (see Figure 2 below).

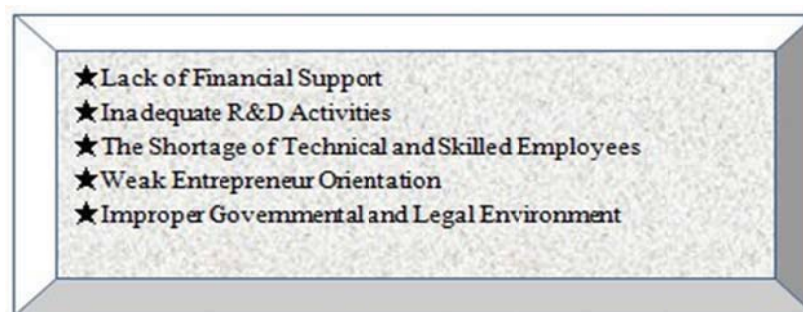


Figure 2. Key Variables

For this study, structured-questionnaires designed to explore the challenges hampering the innovation of Chinese SMEs were adopted in accordance with these five variables. Specially, from September 2014 to October 2015, 120 small and medium-sized enterprises from different industries in Beijing were investigated as a research sample. With the help from commercial chambers and associations of SMEs in Beijing, 318 SMEs were randomly selected in different districts of Beijing City. Accordingly, 318 structured-questionnaires were distributed by a combination of drop-and-collect and e-mail methods in September 2014. However, 175 replies were received and only 120 of them were valid. The rate of valid responses was around 37.74%. The participants were required to answer a series of questions with five-points Likert scale, ranging from strongly disagree '1' to strongly agree '5'.

In order to reduce a research bias, the structured-questionnaire was pre-tested for its validity by professionals who are familiar with SME sectors from universities, research institutions or commercial chambers in advance.

Moreover, the respondents of research questionnaires were general managers, consultants and department directors of SMEs.

3.2 Data Analysis and Discussion

After all the information received from participants, data results were analyzed by Excel and SPSS. The summary of data results is shown as follows (see Figure 3 below).

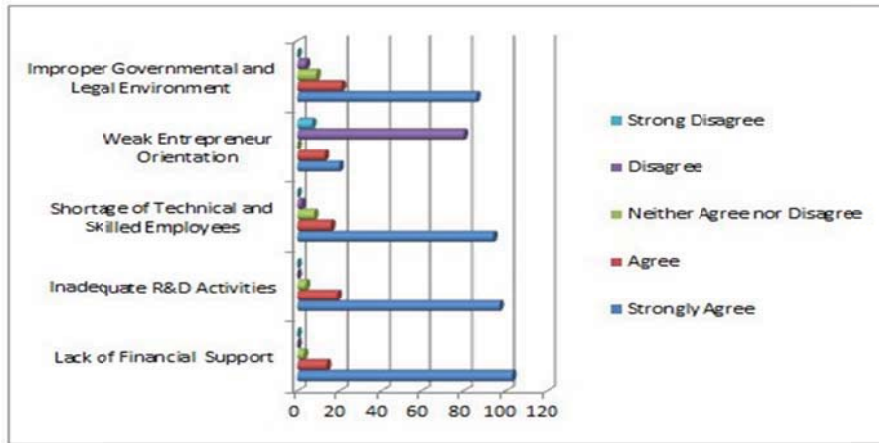


Figure 3. The Summary of Research Results

Figure 3 illustrates that a lack of financial support is the most dominating factor impeding innovation of Chinese SMEs, which is 103 (85.83%) of the respondents strongly agreed as well as 14 (13.59%) of respondents agreed. This result is demonstrated by some previous researches as well. For example, the insufficient funds cannot satisfy the demands of SMEs. The financial restriction severely limits to their implementation of innovation such as technology transfer and R&D activities. This is always complained by the managers of SMEs as well (Xie et al., 2013; Smallbone et al., 2003).

Furthermore, the inadequate R&D activities and the shortage of high-qualified employees are other two main challenges next to the insufficient financial support. Specially, a total of 116 participants strongly agree or agree the inadequate R&D activities as a constraint of innovation, representing 96.67% of this research sample. Moreover, the shortage of manpower, especially for technical and skilled staff, is also viewed as a serious problem of innovation by 110 (91.67%) of respondents.

In addition, the improper governmental and legal environment is regarded as another barrier hindering innovation progress for SMEs in China, representing 86 (71.67%) of the participants strongly agreed as well as 21 (17.50%) of the participants agreed.

On the other hand, it is not a great challenge from the perspective of entrepreneur orientation. This implies the entrepreneurs of Chinese SMEs have increasingly realized the significance of innovation played in the survival and sustainable development of their firms currently.

4. Findings and Recommendations

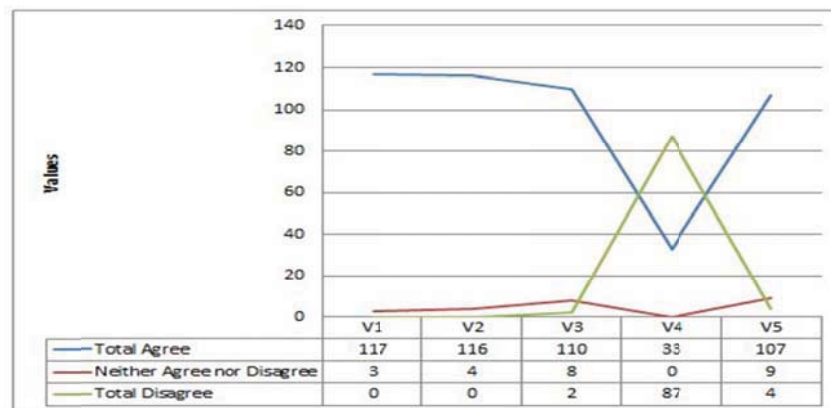


Figure 4. The Total Summary of Data Results

Note. V1-lack of financial support, V2- inadequate R&D activities, V3- shortage of technical and skilled employees, V4-weak entrepreneur orientation, V5- improper governmental and legal environment

From the research findings above, we can summarize that there is no less than 110 respondents regard V1, V2 and V3 as main barriers of innovation for Chinese SMEs. Additionally, 107 (89.17%) of respondents agree with V5 as the other challenge. Based on these problems, several proper recommendations are presented as follows:

4.1 To Provide Adequate Financial Support

More actions and measures should be taken to cope with financial strain of SMEs by a full range of financial support. For example, the Chinese central and local governments have to offer tax deduction even tax exemption, and public borrowing with low interest rates to encourage the innovation activities adopted by SMEs.

Furthermore, the commercial banks and financing institutions need to establish the special programs for Chinese SMEs to expand their scope of financial support.

4.2 To Establish R&D Networks

It is very difficult for SMEs to perform innovation by themselves alone owing to the limitations of available resources and R&D capabilities, compared with their larger counterparts. Therefore, more cooperation between SMEs and other enterprises, universities, science and technology institutions are necessary to enhance the innovation capability of SMEs by establishing professional associations and effective networks together. This would provide more learning opportunities, experience exchange and information sharing.

4.3 To Recruit and Train More High-qualified Staff

The recruitment of high-educated employees with technical and managerial skills is a key for SMEs to improve their poor situation of human resources. SMEs could attract an educated employee by a desired salary and an impartial promotion opportunity. Moreover, Chinese SMEs should offer good fringe benefits to retain their workers. In addition, SMEs have to make increasing efforts on the employee training in order to learn more advanced knowledge and master more useful skills.

4.4 To Create Favorable Governmental and Legal Environment

Although a variety of standards and regulations have been enacted to protect the legal rights of Chinese SMEs, the current legal and administrative systems are still incomplete, especially for the protection of intellectual property rights. The illegal imitation has severely damaged the motivation and creation of innovation. To encourage the innovation activities of SMEs in China, the government should build more favorable and fair environment by improving current policies and broadening scope of legislations. For example, a series of measures should be taken to promote intellectual property protection, including the complete prohibition of pirating and the strict enforcement of present laws (e.g. trademark law, patent law and copyright law).

5. Research Limitations and Suggestions for Future Research

Before the elaboration on the suggestions for future studies, the main limitations of this study need to be informed. First of all, due to the restrictions of limited time and resources, this research merely concentrates on SMEs in one region (Beijing City). This would lead to less acceptable findings. Moreover, only structured-questionnaire is used as research approach and only one director or manager from each enterprise is responsible for answering all questions, which might influence the research results.

To broaden research samples, the future studies are advised to extend the research scope regarding different SMEs in different areas. To overcome the weaknesses of single data source, data can be collected from leaders, employees and trade unions. The deep interview is also necessary to provide more information.

6. Conclusion

As discussed above, five variables are selected as the major criteria for this research. Therefore, all research results and findings are based on these five variables: lack of financial support, inadequate R&D activities, shortage of technical and skilled employees, weak entrepreneur orientation, improper governmental and legal environment. Among these five variables, there is only one factor — weak entrepreneur orientation, is not considered as a dominating challenge. This implies that the majority of entrepreneurs have recognized the importance of innovation capability in the long-term development of SMEs in China. In accordance with the main challenges, four recommendations for the government and SMEs themselves are provided to enhance future innovation capacity.

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