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Call for papers

The International Journal of Economic Behavior aims to publish research articles (both quantitative and qualitative), reports from the field, critical review paper, discussions concerning the main characteristics of the economic behavior and, consequently, decision and organization. Moreover, the journal seeks to discuss the manner in which some of the classical theoretical statements, practices and policy making in Economics, Business and Management are influenced by factors which are not proven to fit the well / known hypothesis of economic rationality. The interdisciplinary approach is required, as economics, psychology, sociology, anthropology are domains that help in understanding the complex economic behavior and provide the researchers with complete tools for analysis.

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Frequency of publication: Once a year, in June

Prospective authors should note that only original and previously unpublished articles will be considered. All article submissions will be forwarded to at least 3 members of the Editorial Review Board of the journal for double-blind, peer review. Final decision regarding acceptance/revision/rejection will be based on the reviews received from the reviewers. All submissions must be forwarded electronically to Fabio Musso, Editor in Chief, at fabio.musso@uniurb.it.

Editor
Fabio Musso

EDITURA T3

IJEB

EDITORIAL

Traditionally, strategic management has been analyzed from an economic perspective, with approaches aiming at understanding the mechanisms underlying firms' performance. The most relevant theories, such as the structure-strategy-performance paradigm by Porter for the analysis of competitive advantage, the game theory about competitive interaction, the evolutionary perspective and the resource-based view, tried to point out conditions and causal mechanisms of competitiveness, linking internal resources to the generation of value in a market context.

More recently, a psychological perspective has been adopted in several studies in order to contribute to understanding organizational and market dynamics. The field of analysis shifted from the external environment to the internal resources of an economic organization, paying increasing attention to the cognitive and behavioral processes. However, the emphasis put by psychology of strategic management literature on behavioral and cognitive aspects of strategy formulation brought to undervalue emotional and affective aspects, leading to a still inadequate representation of strategic management.

There is still a lot of work in terms of interdisciplinary studies to succeed in capturing a vision which includes all perspectives that need to be taken for a complete understanding of the decision-making process of companies and organizations.

This journal aims at encouraging this interdisciplinary approach, firstly by integrating the economic and the management perspectives with the behavioral and psychological ones.

The first article entitled "Explaining Customer Loyalty to Retail Stores in U.S. Hispanic Markets", by Arturo Vasquez-Parraga and Miguel Sahagun provides a better understanding of customer store loyalty. The study employs a model describing key relationships in the generation of customer loyalty, from initial customer satisfaction to trust, to commitment, to loyalty. Results of an empirical research show that customer satisfaction alone will not result in customer loyalty. In today's environment of increasing competition among stores, earning "true" customer loyalty is required. Additionally, attaining customer trust and commitment is an essential component in the path to reach customer loyalty in the long term.

The second article from Domenico Consoli entitled ("The Integration of Interactive and Collaborative Tools 2.0 in Websites of Micro and Small Enterprises") analyses the state of the art about the use of interactive tools in websites of smaller companies that have introduced some experimentations in this direction. The analysis was oriented to understand if entrepreneurs or managers think that new digital channels are relevant in reaching business goals. Results show that small firms understood the potentiality of Web 2.0 and increasingly feel the need to be present on social networks, although this awareness does not always imply the mastery of adequate logic and languages.

Simplice Asongu, with the article entitled "New Financial Development Indicators: With a Critical Contribution to Inequality Empirics" introduces complementary indicators to the existing Financial Development and Structure Database (FDSD). The paper suggests a practicable way to disentangle the effects of the various financial sectors on economic development. The equation of financial depth in the perspective of money supply to liquid liabilities has put on the margin the burgeoning informal financial sector in developing countries.

"Moon Phase as the Cause of Monday Irrationality: Case of Asean Day of the Week Anomaly" is the subject of the article from Rayenda Khresna Brahmana, Chee-Wooi Hooy and Zamri Ahmad. The authors investigated anomalies in investors behavior depending on the

day of the week, trying to verify if a Moon-Induced mood could be a determinant of an irrational behavior.

The article entitled "Retailer - Consumer Relationships for Durable Goods Market in Romania. A Multimethod Analysis" by Manuela Rozalia Gabor, examines the relationship between Romanian consumers of durable goods and retailers that operate on this market. Trough an empirical research on 300 households in Romania, the research revealed a paradox, since Romanian consumers showed distrust in sales personnel and confidence in commercials. This can be considered an indicator of immaturity of Romanian market in comparison with that of other EU Member Countries

Nikola Perovic, with the paper entitled "Psychological Pricing in Modern Retailing: The Case of Wine Sector in Hard-Discounter Chains of Russia", analyses how psychological pricing could be a source of competitive advantage. Results show that psychological pricings bring advantages to retail chains in many aspects, like increasing demand, attracting new business deals, growing profits and customer base by increasing customer loyalty.

The article from Liviu Catalin Andrei offers a contribution to the debate on the field of convergence policies and Optimum Currency Area (OCA). Convergence and OCA are different from free trade area and customs union meaning a paradox in comparison to what was being developed at the beginning of the integration process.

Marco Cioppi, Fabio Musso, Tonino Pennarelli and Elisabetta Savelli present a research on small and medium-sized enterprises in the furniture sector in Italy, with the aim to analyze which kind of strategies SMEs are adopting in order to face the economic crisis. Results revealed the ability of firms in reacting by a strategy change, being able to improve their position in the market.

The impact of productive safety net program on poverty is the subject of the paper authored by Yibrah Hagos Gebresilassie. The paper revealed that the program has positive and significant effect on consumption, livestock holdings, and productive assets. The study also revealed that the program has positive and significant effects on poverty reduction and protecting productive assets.

Abolaji Joachim Abiodun, Kenneth Sola Adeyemi and Adewale Omotayo Osibanjo ("Quality Dimensions, Value, Service Cost and Recommendation Behaviour: Evidence from the Nigerian Cellular Industry") analyze both affective and cognitive factors in cellular services to customers' recommendation behavior. Results of an empirical research indicate that core cellular service dimensions, service cost (price) and hedonic values are significant determinants of customers' recommendation behavior.

"Lying for the Greater Good: Bounded Rationality in a Team" is the title of the last article, authored by Oktay Sürücü. The article is focused on the interaction between fully and boundedly rational agents in situations where their interests are perfectly aligned. The cognitive limitations of the boundedly rational agent do not allow him to fully understand the market conditions and lead him to take non-optimal decisions. On the other side, the fully rational agent can manipulate the information he sends and decrease the expected loss caused by the boundedly rational agent.

Fabio Musso
Editor-in-Chief

EXPLAINING CUSTOMER LOYALTY TO RETAIL STORES IN U.S. HISPANIC MARKETS

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Abstract

Explaining customer store loyalty in emerging markets, in particular Hispanic markets, is the main purpose of this paper. Acknowledging that there have been many attempts to better understand customer store loyalty, this study employs an explanation chain and, thus, a model describing key relationships in the generation of customer loyalty, from initial customer satisfaction to trust, to commitment, to loyalty. Additional variables are explored as moderators of the relationships taking place within the explanation chain. Using both SPSS and SEM analyses, the results support a strong explanation chain of customer store loyalty with moderators adding less than 5% explained variance. Managerial implications and research limitations are also examined.

1. Introduction

This study aims at examining the process store customers follow in developing loyalty to a store. Examining this process is important in a context of a growing market in which store choices are numerous and continue to multiply. Moreover, explaining the formation process of store loyalty is crucial when a) the phenomenon becomes more complex as population grows and more stores enter the markets, and b) existing conceptual frameworks offer limited empirical support.

Thus, the following research questions guide the study:

RQ1. *What are the critical components of an explanation chain of customer loyalty?*

RQ2. *What are the significant moderators of the relationships taking place in the explanation chain?*

RQ3. *How similar or different are Hispanic consumers in the way they become loyal to the stores they patronize?*

The purpose of this research is to attempt an explanation of customer store loyalty by testing an explanation chain of the key relationships taking place in the process of generating customer loyalty. In addition, this research explores the effects of significant moderators in the relationships defining the explanation chain. Research results are based on data gathered from consumers in Hispanic markets in the U.S.

The remaining of the paper addresses the components of explanation chain and the reason why such an explanation is a parsimonious approach to customer store loyalty. Next, the methods and results of the research are explained and discussed along with the research implications of the most important findings. The conclusions of the study are presented last.

2. Explaining Customer Store Loyalty

Both research and practitioners are interested in a parsimonious explanation of customer store loyalty. Several factors have been identified as predictors or influential attributes of customer loyalty in a retail context. Some factors were generated by the retailer, such as service quality (Fullerton, 2005; Wong & Sohal, 2003a) or perceived quality (Mitchell & Kiral, 1998), process brand –the experience that retailers provide—(Davies, 1992), brand differentiation (Tuckey, 2001), private-label use (Ailawadi, Pauwels, & Steemkamp, 2008), incentives offered by retailers (Beeler, 2000), and positive encounters at the store (Wong & Sohal 2003b). Other factors have been identified on the basis of studies of customer behavior, such as budget spent at the store (Knox & Denison, 2000), shoppers' individual needs (Barlow, 2000), cross-shopping (Stark & Ebenkamp, 1999), emotional satisfaction (Wong, 2004), and uncertainty avoidance a la Hofstede (Straughan & Albers-Miller, 2001). In addition, website information and perceived value were positively associated to customer loyalty intentions towards apparel retail websites (Kim & Niehm, 2009).

2.1. The Role of Customer Satisfaction, Trust, and Commitment on Customer Store Loyalty

Satisfaction and loyalty have been key concepts in understanding customer behavior outcomes. At the center of attention, however, is the actual role of customer satisfaction in the achievement of customer loyalty. Some authors assert that loyalty is the result of obtaining customer satisfaction (Hallowell, 1996; Heskett, Jones, Loveman, Sasser, & Schlesinger, 1994), including moderating effects (Chen, Wang, Wang, & Tsai, 2010) and various antecedents (De Wulf, Odekerken-Schroeder & Iacobucci, 2001; Juhl, Kristensen & Ostergaard, 2002; Kristensen, Juhl & Ostergaard, 2001; Murgulets, Eklof, Dukeov, & Selivanova, 2002; Piron, 2001). In contrast, other authors empirically conclude that store loyalty cannot be generated by customer satisfaction alone or that both satisfaction and loyalty are only indirectly related (Miranda, Konya & Havrila, 2005; Reichheld, 1996; Sivadas & Baker-Prewitt, 2000; Vasquez-Parraga & Alonso, 2000).

Yet, accepting that customer satisfaction and loyalty are indirectly related, the key question is which mediating variables are in between satisfaction and loyalty. Authors differ on which mediating variables are relevant.   Trust, commitment, word-of-mouth communication are some mediatory variables identified in previous research (Sivadas & Baker-Prewitt, 2000). More specifically, some alternatives were proposed to explore or explain customer store loyalty, such as the means-end chain (Lee, Chang & Liu, 2010) and the role of retail format in observable loyalty patterns in a market (Bustos-Reyes & Gonzalez-Benito, 2008).

We adopt a framework that appears to be more rational and complete to explain how customer loyalty is generated and sustained when adopting consumer services, the V-A approach (Vasquez-Parraga & Alonso, 2000; Zamora, Vasquez-Parraga, Rodriguez, & Gonzalez, 2011). This approach offers important advantages as a conceptual framework.

First, it adopts "true" loyalty (see Dick & Basu, 1994), which includes both behavioral and attitudinal characteristics. Second, it includes transactional satisfaction, not only product satisfaction, for a more thorough measurement of customer satisfaction. Third, it underscores the importance of three core variables—satisfaction, trust, and commitment—in the explanation of loyalty. These variables have a sequential impact on loyalty starting in a satisfactory experience with both the product and the transaction. Such positive experience generates trust, which in turn produces commitment, which in turn results in loyalty. This sequence of satisfaction, trust, commitment, and loyalty is the explanation chain (Hunt, 2010) and attempts to represent a parsimonious explanation of customer loyalty. Thus, customer loyalty is defined as the end result of trust and commitment between the client and the provider through multiple encounters, building up a satisfactory relationship in the long-term (Bravo, Vasquez-Parraga, & Zamora, 2005; Torres, Vasquez-Parraga, & Barra, 2009; Zamora, Vasquez-Parraga, Morales, & Cisternas, 2004).

2.2. The Role of Other Factors on Customer Store Loyalty

Unlike Oliver (1997, 1999), Sawmong & Omar (2004), and Evanschitzky & Wunderlich (2006), who study loyalty under conditions of cognitive, affective, conative, and action evaluations, the V-A approach examines the entire process of generating loyalty under both essential conditions, cognitive and affective, and thus identifies and tests a number of moderating effects on either the role of trust or the role of commitment on the basis of two attitude sources, cognitive and affective. The cognitive effects derive from attitudes such as customer perceived risk, store familiarity, store choice, and communication. The affective influences derive from attitudes such as customer opportunistic propensity, consumer involvement, and shared values with the service provider. Both, the cognitive and affective attitudes moderate the effect of either trust on commitment or commitment on loyalty, as shown in Figure 1.

Figure 1 – Antecedents of Customer Loyalty (Adapted from Vasquez-Parraga & Alonso, 2000)
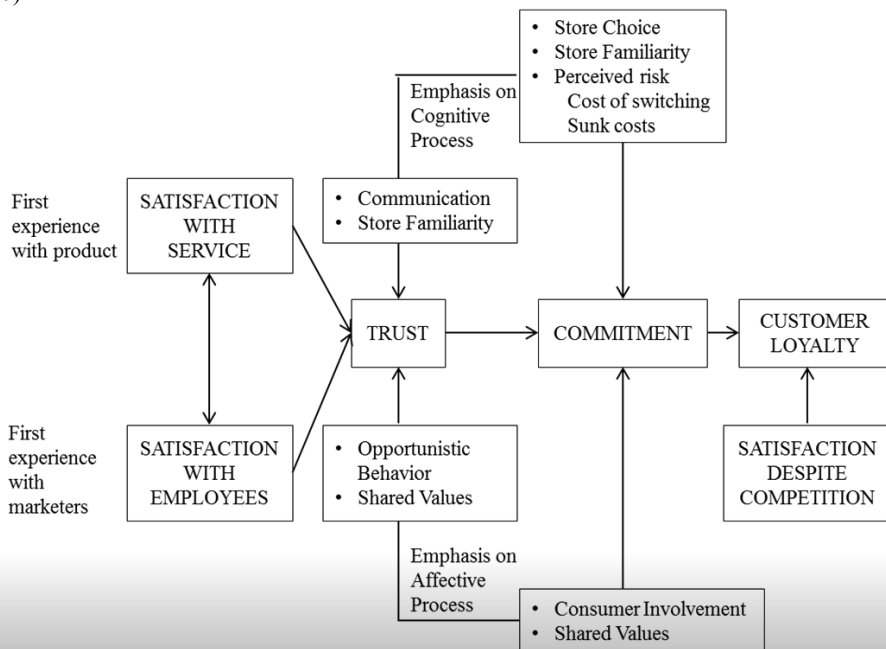
In addition, we examine the role of some demographic characteristics, such as income and education, besides the core explanatory variables of loyalty and the corresponding moderating effects on trust and commitment. No hypotheses were posited because the research reported here is formative in the area of customer store loyalty; nonetheless, the results are reflective in the study of loyalty using the V-A approach.

3. Methodology

Following a previous application of a survey research designed to test the explanation chain with transportation users (Zamora et al., 2011), this study adapted the questions and measures related to the eight core constructs and eight moderating factors used. The eight core constructs representing the process leading to loyalty and the explanation chain are cognitive loyalty, affective loyalty, behavioral loyalty, trust, commitment, satisfaction with service, satisfaction with employees, and satisfaction despite competition. The eight moderating factors of the effects of trust on commitment and the effects of commitment on loyalty are store choice, store familiarity, company opportunism, communication between the customer and the company, perceived risk, consumer involvement with the service, shared personal values, and shared management values, as listed in Table 1.

Table 1 – Confirmatory Factor Analysis

Constructs and Items	Factor Loading
Inner Behavioral Loyalty (α = .853, AVE = 61.647%)	
Even though grocery stores are available in many brands, I always use the same one.	.665
If I like a grocery store, I rarely switch from it just to try something different.	.564
I have been with my favorite store for a long time.	.871
I plan to continue relying on my favorite store for a long time.	.846
Outer Behavioral Loyalty (α = .843, AVE = 86.616%)	
I say positive things about my favorite store to others.	.877
I encourage friends and relatives to use my favorite store.	.770
Affective Loyalty (α = .877, AVE = 59.492%)	
Once I get used to a store, I hate to switch.	.744
I feel a strong loyalty to my favorite store.	.837
I have developed some sort of emotional connection with my favorite store.	.745
Continued service from my favorite store gives me peace of mind.	.752
I'd like my current favorite store to be my permanent store.	.774
Cognitive Loyalty (α = .800, AVE = 45.562%)	
Once I get to know a grocery store, I tend to use that store more often.	.539
For the time being, I am not looking for an alternative store.	.617
When I decide to stay with a store, I make sure that the store is a competent one.	.790
I am loyal to my grocery store because personnel at this store are very knowledgeable.	.704
Client loyalty in grocery stores is based on good reasons or experiences.	.697
Commitment (α = .905, AVE = 66.430%)	
I am proud to be a client of my favorite grocery store.	.857
I feel a sense of belonging to my store.	.892
As far I am concerned no one could choose a better grocery store.	.814
I am very confident about the success of my store.	.765
I feel that I have a personal relationship with my grocery store.	.737

α = Cronbach coefficient alpha.
AVE = average variance extracted

Table 1 – Confirmatory Factor Analysis (Continued)

Constructs and Items	Factor Loading
Trust (α = .900, AVE = 60.716%)	
I have complete faith in the integrity of the personnel at my store.	.786
I feel quite confident that my store will always try to treat me fairly.	.849
My grocery store has been frank in dealing with me.	.780
My store would never try to gain an advantage by deceiving its clients.	.810
My grocery store is trustworthy.	.807
I am sure that the offerings at my favorite grocery store are valuable ones.	.625
Opportunism (α = .865, AVE = 57.097%)	
To accomplish its own objectives, my store might not provide me with the best benefits available.	.658
To accomplish its own objectives, my store sometimes promises to do things without actually delivering them	.716
My grocery store sometimes pretends that a service is of value to me, when in fact the store is looking out for itself.	.846
I think that my store does not care about me.	.811
M y grocery store only cares about the money I pay.	.731
Familiarity (α = .861, AVE = 53.865%)	
Compared to other people, I know a lot about grocery stores.	.904
Compared to most of my friends, I know a lot about grocery stores.	.915
I am familiar with many products offered by my favorite store.	.609
I know a lot about selecting products and services made available by grocery stores.	.666
I have a clear idea about what grocery stores should offer for me to get maximum satisfaction.	.473
Risk (α = .848, AVE = 53.981%)	
I am concerned about making a mistake in choosing a grocery store.	.714
The decision to choose a grocery store involves high risk.	.829
If I have to switch my current store, I might lose some benefits I have already earned.	.793
I think that there is a hidden cost if I switch my current store.	.746
Switching among stores involves a cost in terms of time and effort.	.562
Communication (α = .853, AVE = 54.661%)	
My store keeps me informed of new products.	.585
My store clearly explains the product features when I ask.	.738
When I make suggestions, the personnel working at my store always listen to my suggestions.	.798
If I want to, I can have detailed conversations regarding products and prices with personnel from my store.	.846
As far as I know, my store cares about receiving feedback from its customers.	.702
Involvement (α = .889, AVE = 62.035%)	
I have great interest in grocery stores.	.849
Grocery stores are fascinating.	.879
I have a compulsive need to know more about grocery stores.	.783
I like to make comparisons between grocery stores.	.641
I like to talk to my friends about grocery stores.	.764
Shared Personal Values (α = .774, AVE = 81.578%)	
In this business, unethical behaviors shouldn't be tolerated.	.989
In this business, using unethical advertising cannot be justified.	.608

α = Cronbach coefficient alpha.
AVE = average variance extracted

Table 1 – Confirmatory Factor Analysis (Continued)

Constructs and Items	Factor Loading
Shared Management Values (α = .725, AVE = 41.815%)	
In this business, unethical behaviors shouldn't be tolerated.	.752
In this business, using unethical advertising cannot be justified.	.815
The way opportunistic stores try to get new customers is unethical.	.499
It is unethical to call a competitor's customers and try to convince them to switch stores.	.439
Satisfaction with Service (α = .908, AVE = 72.680%)	
This is one of the best experiences with a grocery store I have ever had.	.729
This grocery store is exactly what I need.	.907
This grocery store has worked out as well as I thought it would.	.902
This grocery store has adequately fulfilled my expectations.	.860
Satisfaction with Employees (α = .876, AVE = 64.131%)	
Employees at my current grocery store give me personal attention.	.809
Employees at my current grocery store know what they are doing.	.794
Employees at my grocery store are never too busy to respond to client requests promptly.	.839
Employees from my favorite grocery store are polite.	.760
Satisfaction Despite Competition (α = .896, AVE = 68.407%)	
Compared to the other stores, my grocery store offers the best products.	.822
Compared to the other stores, my grocery store has the best reputation.	.828
Compared to the other stores, my stores gives customers the best satisfaction overall.	.860
I am satisfied with my decision to choose this store over all the other stores.	.797

α = Cronbach coefficient alpha.
AVE = average variance extracted

In order to apply the framework to store users in line with the purpose of this research, adult consumers were approached in a geographical area where 1) consumers have access to grocery stores carrying either national or local or both types of brands, 2) different requirements to get customer satisfaction in the short-term and gain customer loyalty, trust and commitment in the long-term can be scrutinized, and 3) consumers predominantly share a Hispanic ethnic background.

Numbering more than 50 million people, Hispanic consumers are the largest minority, approximately 16% of the U.S. population. Hispanic consumers represent several countries of origin in Latin America, in particular Mexico as well as countries in Europe and Asia. Despite the range of national origin, common demographics and similar ethnic traits are the basis for the official U.S. government designation of this large demographic segment as "Hispanic." Consumer researchers have generally studied Hispanics on the basis of the strong impact of cultural heritage on consumer behavior (Wadia, 1967), the constraints that the social majority imposes on minority ethnic groups to limit both consumption and opportunities for self-fulfillment and psychological well-being (Hirschman, 1985), and the situational effects, such as social surroundings and product type, that moderate the relationship between felt ethnicity and consumer behavior (Stayman & Deshpande, 1989). We assume in this study that Hispanic consumers may demonstrate social and situational differences in the way they get customer satisfaction, trust others in the society, commit to others, and become loyal customers.

Only heads of households and/or adults who acknowledged having shopping experience were interviewed. The actual sample included 362 store customers. Table 2 summarizes the sample profile. About 62% are women, 45% married, and 41% older than 30 years.

Table 2 – Sample Profile

Characteristics	Percentages
Gender	
Males	38.3
Females	61.7
Marital Status	
Married	44.8
Single	46.4
Divorced or Separated	8.8
Age	
20 years or less	4.7
Between 21-30 years	54.2
Between 31-40 years	15.8
Between 41-50 years	15.0
50 years or more	10.3

4. Results and Discussion

4.1 Results on the Measures Used

Table 1 shows all the constructs measured including the items used, their factor loadings, their reliability coefficients (α), and the average variance explained (AVE). The items representing cognitive, affective, and behavioral loyalty loaded as expected in corresponding constructs, with a minor exception. Behavioral loyalty reflected two components, an inner and an outer tendency of behavioral loyalty as best described by the items themselves (see Table 1). All four constructs reflecting customer loyalty show high reliability coefficients (above .80) and significant average variances explained. As a result, customer loyalty is a second-order factor derived from four constructs.

Similarly, the items representing customer commitment and trust and the items reflecting the three types of satisfaction (with the service, with employees, and with the competition) loaded as expected with reliability coefficients above .85 and average variance explained above 67%. Customer satisfaction is a second-order factor derived from three constructs.

Both sets of constructs, loyalty and satisfaction were further analyzed using structural equation modeling to obtain corresponding second-order factors and a simultaneous fit of the model. Figure 2 shows the well-fitted second-order constructs of customer loyalty and satisfaction and the resulting overall fit of the model representing the explanation chain.

Figure 2 – Customer Store Loyalty: Explanation Chain - SEM Results

Table 3 reports on the model fit measures including CFI = .920, NFI= .863, Chi Squared (692) = 1,520.621 at p = .000, RMSEA= .058, and SRMR= .073. These are all plausible goodness of fit results. Both Figure 2 and Table 3 also show the explained variances of Trust (R^2 = .617), Commitment (R^2 = .728), and Loyalty (R^2 = .729), denoting high levels of explanation, before additional variables are considered in the model.

In contrast, data from a sample of non-Hispanic consumers (not reported in this paper) shows slightly weaker explanatory results for Trust (R^2 = .567), Commitment (R^2 = .708), and Loyalty (R^2 = .687).

4.2. Results on the Loyalty Process

Tables 4 and 5 quantify the loyalty process relationships charted in Figure 1. Table 4 shows the mutual relationships among all constructs. All core variables are highly and positively related at $p < 0.01$ level. Similarly, all moderating factors are significantly related at $p < 0.01$, except for 4 relationships (commitment – opportunism; commitment - shared personal values; shared personal values – store familiarity; shared manager values – perceived risk) that are significant at $p < 0.05$, and 6 relationships out of 29 (opportunism - shared management values; opportunism - shared personal values; opportunism – consumer involvement; shared personal values - communication; shared personal values - perceived risk; shared personal values - consumer involvement) that are not significant.

Finally, all core variables are significantly related, though not always positively, to all moderating factors at $p < 0.01$. Opportunism is negatively related to all core variables signifying the counter-effect of an "egoist" trait to the relational properties of loyalty, commitment, trust and satisfaction.

Table 5 shows the joint effects of the independent variables on the dependent variable, loyalty, using hierarchical moderated regression analysis with one-tailed test for significance when testing for the various effects. Three models are used in order to observe the separate effects of groups of variables starting with the core variables (Model 1), following with the moderating variables (Model 2), and finishing with simple interaction terms between a core variable and a moderating variable (Model 3).

Notably, the core variables explain a relatively high R^2 coefficient (.607) for customer loyalty to the store (Table 5, Model 1) whereas the moderating variables impact loyalty only to some extent (ΔR^2 is .017) as seen in Model 2. With that advantage, the interaction terms increase the coefficients to .637 (ΔR^2 = .015) as shown in Model 3, indicating a minor presence of sub processes in the overall process of generating and sustaining customer store loyalty.

The moderating effects of shared personal values interacting with trust in Model 3 are particularly notable. Shared personal values significantly and negatively interact with customer trust. When shared personal values are present, the role of trust becomes reduced. The more personal value is shared by the customer, the less trusting to the store is the customer.

In contrast, data from a sample of non-Hispanic consumers (not reported in this paper) shows similar results although the impact of the core variables on customer loyalty is slightly lower (.555); the additional effect of the moderating factors is also weaker (R^2 = .582) despite a greater increase in effects (ΔR^2 is .027); and the additional effect of meaningful interactions is little (R^2 = .597) despite a significant interaction Trust – Shared Personal Values (-.072***) which produced a slightly greater increase in overall effects (ΔR^2 is .015).

Table 3 – Fitting of Results to the A-V Explanation Chain (see Fig. 2)

Measurement Parameter Estimates (Standardized)

Factor Loadings

				Error Variances			
λSat_E1	.821***	λLo_BI1	.715***	εSat_E1	.064***	εLo_BI1	.086***
λSat_E2	.802***	λLo_BI2	.573***	εSat_E2	.050***	εLo_BI2	.138***
λSat_E3	.813***	λLo_BI3	.894***	εSat_E3	.067***	εLo_BI3	.054***
λSat_E4	.766***	λLo_BI4	.913***	εSat_E4	.058***	εLo_BI4	.046***
λSat_S1	.742***	λLo_BO1	.858***	εSat_S1	.068***	εLo_BO1	.086***
λSat_S2	.891***	λLo_BO2	.854***	εSat_S2	.037***	εLo_BO2	.103***
λSat_S3	.892***	λLo_A1	.746***	εSat_S3	.031***	εLo_A1	.114***
λSat_S4	.880***	λLo_A2	.850***	εSat_S4	.029***	εLo_A2	.068***
λSat_C1	.820***	λLo_A3	.719***	εSat_C1	.043***	εLo_A3	.127***
λSat_C2	.812***	λLo_A4	.744***	εSat_C2	.047***	εLo_A4	.089***
λSat_C3	.867***	λLo_A5	.784***	εSat_C3	.034***	εLo_A5	.081***
λSat_C4	.807***	λLo_C1	.571***	εSat_C4	.047***	εLo_C1	.095***
λTrust1	.809***	λLo_C2	.645***	εTrust1	.058***	εLo_C2	.117***
λTrust2	.844***	λLo_C3	.704***	εTrust2	.045***	εLo_C3	.082***
λTrust3	.774***	λLo_C4	.769***	εTrust3	.053***	εLo_C4	.091***
λTrust4	.793***	λLo_C5	.655***	εTrust4	.065***	εLo_C5	.083***
λTrust5	.805***			εTrust5	.046***		
λTrust6	.620***			εTrust6	.079***		
λComt1	.848***			εComt1	.048***		
λComt2	.861***			εComt2	.049***		
λComt3	.801***			εComt3	.069***		
λComt4	.798***			εComt4	.054***		
λComt5	.757***			εComt5	.088***		

Structural parameter estimates	**Gamma (γ 's)**
γSatisfaction-Trust	.785***
γTrust-Commitment	.853***
γCommitment-Loyalty	.854***

Second order factors		**Second order factors**	**Gamma (γ 's)**
γLoyalty-Loy_BInner	.773***	γSatisfaction-Sat_E	.867***
γLoyalty-Loy_BOuter	.727***	γSatisfaction-Sat_S	.868***
γLoyalty-Loyal_A	.954***	γSatisfaction-Sat_C	.946***
γLoyalty-Loyal_C	.931***		

Explained variances: R^2Trust = .617*** R^2Commitment = .728*** R^2Loyalty = .729***

Goodness of fit
$X^2(692) = 1520.621$, p = .000
RMSEA = .058
SRMR = .073
NFI = .863
CFI = .920
TLI = .914

*** p<.001 (two-tailed)

Table 4 – Correlations Matrix

Variable	1	2	3	4	5	6	7	8	9	10	11	12
1. Loyalty	1.00											
2. Commitment	.751**	1.00										
3. Trust	.681**	.757**	1.00									
4. Satisfaction	.620**	.639**	.709**	1.00								
5. Opportunism	-.154**	-.135*	-.281**	-.263**	1.00							
6. Shared P. Values	.152**	.107*	.219**	.243**	-.083	1.00						
7. Shared M. Value	.148**	.194**	.228**	.296**	-.082	.369**	1.00					
8. Communication	.478**	.518**	.544**	.636**	-.259**	.097	.274**	1.00				
9. Store Familiarity	.529**	.540**	.481**	.551**	-.078	.128*	.155**	.482**	1.00			
10. Store Choice	.323**	.404**	.381**	.310**	.162**	.197**	.205**	.262**	.342**	1.00		
11. Perceived Risk	.215**	.329**	.169**	.257**	.243**	.016	.131*	.302**	.324**	.140**	1.00	
12. C. Involvement	.333**	.471**	.310**	.369**	.048	.001	.198**	.535**	.520**	.203**	.548**	1.00

**Correlation is significant at the 0.01 level (2-tailed).
* Correlation is significant at the 0.05 level (2-tailed).

Table 5 – Regression Results: Explanation Chain and Moderating Factors

Dependent Variable:	MODEL 1[a]		MODEL 2[b]		MODEL 3[c]	
Customer Loyalty	b	t-value	b	t-value	b	t-value
Constant	18.190***	5.761	16.033***	3.615	-3.974	-.202
Commitment	1.414***	9.803	1.426***	9.047	1.243*	1.814
Trust	.461***	3.082	.412***	2.647	1.255	1.557
Satisfaction	.262***	3.520	.178**	2.283	.163**	2.043
Opportunism			.083	.832	.204	.366
Shared Personal Values			.192	.955	1.620*	1.778
Shared Management Values			-.146	-1.231	-.501	-.813
Communication			.149	1.064	.625	1.118
Familiarity			.442***	3.351	.007	.010
Product Choice			-.168	-.772	-.447	-.599
Perceived Risk			-.080	-.782	-.052	-.106
Consumer Involvement			-.175*	-1.631	.558	1.173
Trust x Opportunism					-.004	-.275
Trust x Shared P. Values					-.050*	-1.707
Trust x Shared M. Values					.027	.954
Trust x Communication					-.017	-.939
Trust x Familiarity					-.014	-.530
Commitment x C. Involvement					-.029	-1.567
Commitment x Shared M. Values					-.019	-.671
Commitment x Familiarity					.036	1.426
Commitment x Product Choice					.014	.470
Commitment x Perceived Risk					.000	-.024
R^2	.607		.624		.637	
F	184.241		52.894		28.371	
ΔR^2			.017		.013	

[a] Core variable effects
[b] Moderating variable effects
[c] Two-way interaction effects
*p<.10, **p<.05, ***p<.01 (one-tailed test for hypothesized relationships).

5. Conclusions

In response to the first research question—*What are the critical components of an explanation chain of customer loyalty?*—this research found that the impact of satisfaction, trust, and commitment on customer loyalty is sequential in the form of an explanation chain. A satisfactory experience with the store services and employees generates customer trust, which in turn produces relationship commitment between the customer and the store, which in turn results in customer loyalty in the long term. By testing an explanation chain, this study contributed an account of how store users become loyal to the store. It was found that the process of providing customer satisfaction and generating customer loyalty in stores is dependent on the core factors of the V-A approach used, in particular commitment and trust, the necessary mediating variables of the satisfaction-loyalty link.

In response to the second research question—*What are the significant moderators of the relationships taking place in the explanation chain?*—the effect of trust can be mildly reduced by the prevalence of shared personal values in customers' behavior. Yet, an attempt to uncover other moderating effects using the other seven potential factors did not result in additional explanation. The results show that many other variables affecting customer loyalty may be mild at the best, not directly but indirectly, and not to the level of effects caused by the core variables, satisfaction, trust, and commitment in this sequential order.

In response to the third research question—*How similar or different are Hispanic consumers in the way they become loyal to the stores they patronize?*—this study shows non-significant differences in the way the process of generating and maintaining customer loyalty takes place. Both Hispanic consumers and non-Hispanic consumers become loyal customers following the path suggested by the explanation chain; however, Hispanic consumers reflect higher levels of satisfaction, trust, commitment, and loyalty than those reported for non-Hispanic consumers. For both groups of consumers, the core variables significantly impact the generation of customer loyalty while other variables, such as the moderating variables explored in this research, have a negligible impact.

There are practical consequences of this research on the understanding of loyalty formation among store customers and the management of the store seeking to develop long-term relationships with buyers. Customer satisfaction alone will not result in customer loyalty, unless managers are complacent about repeated purchase (spurious loyalty) in a context of little or no competition. In today's environment of increasing competition among stores, earning "true" customer loyalty is required; additionally, attaining customer trust and commitment is an essential component in the path to reach customer loyalty in the long term.

This study is limited by the sample and the use of eight moderating factors. More representative sampling and additional moderating variables may capitalize on the properties of the V-A approach to a greater extent to explain "true" loyalty more fully and, at the same time, understand customer store loyalty more thoroughly.

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THE INTEGRATION OF INTERACTIVE AND COLLABORATIVE TOOLS 2.0 IN WEBSITES OF MICRO AND SMALL ENTERPRISES

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Abstract

Nowadays also micro and small companies use interactive web sites that integrate some tools 2.0 (chat, blogs, forums, ...) and links to social networks, such as Facebook and Twitter, to interface with the external environment. By these new tools companies can interacts with all stakeholders of the supply chain and in particular with customers to improve their products/services. In this way between customers and company a bidirectional channel is established and a process of co-creation and co-production of products/services is stimulated. Small enterprises should take advantage using these technological channels to increase the competitiveness. In this paper we analyse the state of the art about the use of interactive and collaborative tools in websites of micro and small companies that have introduced some experimentations in this direction. The analysis is oriented to understand if entrepreneurs or managers think that these new digital channels are important in reaching business goals.

1. Introduction

In Italy, like to european countries, the entrepreneurial context consists of many Small and Medium Enterprises (SME) operating in local and international markets. Regarding the information technology, in recent years, the basic computerization of SMEs is growing. Internet and PC are present in almost all small enterprises.

SMEs to be more competitive, must invest in innovation and technology. The Information Communication Technology (ICT) and in particular web technologies are a source of innovation and a great opportunity for the development. Enterprises must develop quality products that meet customers requirements to acquire new market shares and competitive advantages. To create an interactive channel with customers and gather their opinions and suggestions on products/services companies could use web 2.0 tools (e.g. chat, forum, blog) and social media (e.g. facebook, youtube, twitter, flickr). The aim of this paper is to analyse the business environment of micro and small companies to understand if they use this new technology to interact with the market and in particular with customers.

Scientific questions are the following:

- Are corporate websites of SMEs just showcases that illustrate the company, products/services and business contacts?
- In websites, are there some elements of interactivity in exchanging information with all stakeholders?
- Are web 2.0 tools used in business activities?
- Can be websites of SMEs considered as a context of co-creativity and co-production with customers?
- Do entrepreneurs/manager unterstand potentialities of web 2.0 technology?
- For the adoption of the web 2.0 is it important the technological pre-existing environment?

In our research to answer to these scientific questions we use a quantitative method. After a literature review on the web 2.0 channel adopted in SMEs, we have considered a sample of enterprises and we have analysed their websites and administered a questionnaire to entrepreneurs/managers to unterstand their viewpoint on these new interactive technologies.

The paper is structured as follows: in the next section we show a literature review on the web 2.0 technology and its use in micro and small contexts. Then we describe a reserch methodology and illustrate the results of this research. At the end, analysing the results, some conclusions are drawn.

2. Literature Review

The concept of Web 2.0 was born, in 2005, during a brainstorming session of a conference on the web (O'Really, 2005). In this conference many participants affirmed that the web is more important with new interesting applications that involve online collaboration among users.

Subsequently an enterprise that uses web 2.0 tools was defined, from Andrew McAfee (2006), Enterprise 2.0. The author affirms that "Enterprise 2.0 is the use of emergent social software platforms within companies, or between companies and their partners or customers". An Enterpise 2.0 is an organizational and technological model based on active participation of all stakeholders (customers, suppliers, sponsors, business partners) who share knowledge. It represents a breakdown of traditional organization models towards an open and cooperative architecture of a social enterprise. The features of this new model are: bottom-up, open, interconnected and agile and the keywords are: sharing, cooperation and interactivity.

With collaborative and cooperative tools the enterprise is more efficient and flexible to listen partners and in particular customers. In the web there are various sites that collect customer reviews (Cho et al., 2002): epinions.com, planetfeedback.com, cnet.com, ciao.it, complaints.com, dooyoo.it, ecomplaints.com.

By web 2.0 tools it is possible to create an interactive bi-directional channel among people, customers and suppliers. A process of co-creation and co-production is activated. Customers and suppliers become co-producers and partners in the conception/design of product/service. The customer becomes prosumer, consumer and producer at the same time. In the literature the figure of prosumer has been emphasized in the book "The Third Wave" (Toffler, 1980). With this therm Toffler predicted the fusion of the roles of producers and consumers in the new figure. In the Cluetrain Manifesto (Levine et al., 2001), the authors affirm that "markets are conversations" and with the digital revolution there was a change of role of consumer from passive consumer to active prosumer. In the best seller "Wikinomics: How Mass Collaboration Changes Everything" (Tapscott and Williams, 2006), the authors develop the concept of prosumer coining the related term of prosumption (production/consumption) that refers to the creation of products and services by the same consumers.

In Time Magazine, Grossman (2006) affirmed that Time's Person of the Year, for 2006 , is 'You' "for seizing the reins of the global media, for founding and framing the new digital democracy, for working for nothing and beating the pros at their own game".

Contents' production is no longer the prerogative of the media centers, press and traditional producers but everyone can participate in the production of contents by simple platforms.

This phenomenon is indicated by terms User Generated Content (UGC) (Strobbe et al., 2010) or Consumer Generated Media (CGM) (Sumi, 2008). These terms born, in 2005, in the areas of web publishing and new media to indicate the material available on the web produced by users rather than specialized companies.

Web 2.0 tools allow to implement a virtual community where owner-managers and customers can communicate, collaborate, co-producer together and improve product/service. The concepts of Enterprise 2.0, User Generated Content, Prosumer and Wikinomics are connected among themselves in a context of co-creativity and co-operation that allows to companies to gain competitive and strategic advantages.

Micro and small enterprises, which are normally deep-rooted in the territory, may take advantage of web technologies to expand them in a wider geographic market and even in a global market. Integrating, in their websites, an e-commerce section may be useful to expand geographical boundaries of the market and to sell abroad products/services. By social channels, the customer can be reached anywhere (Consoli, 2012a).

Micro and small enterprises can use channels 2.0 to implement projects of open innovation (Chesbrough, 2003, 2006; Chesbrough et al., 2008), thus compensating the lack of internal research labs. They can exploit the crowdsourcing phenomenon (Howe, 2006a, 2006b; Stewart et al., 2009) or broker intermediaries to launch the application on the web to find a solution for a technical problem and accept ideas that come from external solvers. Small companies can use the professional social network LinkedIn to consult public curriculum of candidate employees for the recruitment. Some small enterprises use Linkedin to search business partners to implement shared projects (contract projects). This happens especially in the sector of furniture for offices/shops, where they are looking for partners of electrical components or for masonry works, so that it is possible to deliver to the customer a complete end product (turnkey).

A survey, conducted in 2009 (Finotto e Micelli, 2010), taking into account the adoption of Web 2.0 technologies on a sample of 1,003 small and medium-sized enterprises operating in the Made in Italy. In the research they monitored the adoption of management software, web sites and the presence of companies on major social networks and contents aggregators.

By search results, authors deduced that the adoption of Web 2.0 technologies is not dependent on previous experience in the use of management software like Enterprise Resource Planning (ERP) or Enterprise Content Management (ECM). The skill on the management of virtual spaces is independent of the know-how of traditional ICT (legacy).

The second edition of Iulm Observatory (2011) on the use of social media by Italian companies showed that small enterprises that use social channels increased from 9.8% (2010) to 43% (2011), with a reduction in the gap compared to medium and the large companies that increased activities 2.0 of a smaller percentage (medium companies increased from 32.3% (2010) to 47.2% (2011) and large companies from 57.9% (2010) to 58.4% (2011)).

Like the first edition (made in May-November 2010), the research has considered six areas of economic interest: fashion, food, hospitality, government, banks and furniture. For each sector were analysed 120 companies (for a total sample of 720 cases), segmented by size (40 large, 40 medium and 40 small). The attribution of the dimension was made in relation to the turnover, with differentiated classes for each sector analysed.

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3. The Research

3.1 Research Methodology

In the paper we analysed the websites of 48 micro and small enterprises on the use of web 2.0 tools and we administered a questionnaire to entrepreneurs or managers in sectors like ICT/Marketing/Communication.

The analysis of the website has been useful for monitoring tools and interactive channels used by the company and to see if these tools were integrated in a coherent and coordinated design inside the website.

To define the sample of companies to analysis, at first, we spoke with representatives managers of professional associations that represent the Italian micro and small enterprises (Confartigianato and CNA). Taking in consideration their suggestions and other sources, like the website and the press, we have selected no. 48 local small enterprises that have activated, inside, some experiments 2.0. These companies operate in diversified sectors: mechanical-electronic (19%), furniture (25%), fashion-artistic (23%), food and wellness (17%) and services-communication (16%).

In the selected sample we can distinguish companies belonging to sectors of low information intensity, such as mechanical and electrical engineering, medium information intensity, such as furniture, fashion or artistic and high information intensity, such as services/communication. The difference depends on the content of "information" inherent the specific product/service that represents the core business of the company.

In the sample we consider both companies that produce for the industrial market (B2B - Business-to-Business) and for end customers (B2C - Business-to-Consumer). Inside B2B companies there are enterprises that produce for the retail market and have also a brand for end customers (B2B2C – Business-to-Business-to-Consumer).

The selected sample takes into account companies belonging to different size classes: from individual companies without employees to company with 50 employees. In particular, within the sample, the distribution of companies for dimensional classes is the following: companies with no more than 2 employees (35%); companies with a number of employees between 3 and 10 (23%); companies with a number of employees between 11 and 30 (25%) and with a number of employees between 31 and 50 (17%).

We have assigned a greater weight to companies with less than 3 employees because this type of enterprises, in implenting the model of Enterprise 2.0, do not have yet been studied in the literature to better understand their dynamics and the phenomenon 2.0.

After selecting the sample of enterprises, a first important step was to analyse the websites of various companies under investigation. Compared to a study of a few years ago on a wider sample of companies belonging to an Association of Small Businesses, it was noted that today a greater number of companies has a website and that almost all have some interactive channels to interchange information with customers, such as contact forms or web 2.0 tools (blog, chat, forum, social networks).

The website analysis was useful also to formulate a questionnaire for entrepreneurs/managers to understand who manage the website, the channels 2.0, the strategic planning and future trends. In the administration of the questionnaire several companies interviewed have expressed their intentions to update the website.

3.2 The profile of the sample of companies

The selected sample of 48 companies operates in the following sectors (Table 1):

Table 1 - Business sector of companies.

Business Sector (code)	Description	Number of companies
F	Furniture	13
FA	Fashion/Artistic	11
SC	Services/Communication	8
FW	Food/Wellness	9
ME	Mechanical-Electronic	7

The first 4 sectors of Table 1 are high information-intensive (they can take advantages by information technologies), while the sector mechanical/electronic is low information-intensity. Virtual channels and web technologies promote very well furnitures (F sector) or tailored clothes/artistic objects (FA sector) and not mechanical-electronic devices (ME sector).

The analysed companies, based on the number of employees, may be grouped into the following classes (Table 2).

Table 2 - Company employees.

No. employees for company	No. of companies
<=2	17
>2 e <=10	11
>10 e <=30	11
>30 e <=50	9

As we can see from Table 2, in the choice of companies, we have given more weight to micro enterprises with two employees (an entrepreneur with an employee or two entrepreneurs) than to companies more structured having from 30 to 50 employees. The reason is due to the desire to investigate the phenomenon 2.0 inside micro companies that do not have yet been investigated from this point of view.

The companies analysed were 48 and their profile (identification code, sector, market, company representative who responded to questionnaire, number of employees) is shown in Table 3. If the number of employees is 0 it means that only the entrepreneur works in the company.

Among the 48 selected companies, 23 are B2B, 8 are B2C and 17 are both B2B and B2C companies that provide retailers and have their own brand for the end customer. We can identify these companies as B2B2C. B2C companies are generally those more interested in opening a dialogue with end customers.

Table 3 - Profile of analysed companies.

Identification Code	Sector	Market	Company representative	Number of employees
Agme15	ME	B2B	marketing manager	15
Mtam2	F	B2B	entrepreneur	2
Mosc	SC	B2B B2C	entrepreneur	0
Smma	FA	B2B B2C	entrepreneur	0
Lpam20	F	B2B B2C	entrepreneur	20
Abma32	FA	B2B B2C	entrepreneur	32
Fpam16	F	B2B	entrepreneur son	16
Fbab46	FW	B2B	entrepreneur	46
Cume7	ME	B2B	entrepreneur	7
Egab15	FW	B2B	marketing manager	15
Acam27	F	B2B	entrepreneur	27
Clam8	F	B2B	entrepreneur	8
Kcab3	FW	B2C	entrepreneur	3
Siam16	F	B2B	communication manager	16
Saab8	FW	B2B	entrepreneur	8
Omma	FA	B2B B2C	entrepreneur	0
Inme50	ME	B2B	marketing manager	50
Cmme16	ME	B2B	entrepreneur	16
Fbma2	FA	B2B B2C	entrepreneur	2
Mhsc7	SC	B2C	entrepreneur	7
Msam48	F	B2B	ict manager	48
Kaam6	F	B2B	entrepreneur	6
Aaam15	F	B2C	entrepreneur	15
Tfsc12	SC	B2C	entrepreneur	12
Deme1	ME	B2B	entrepreneur	1
Gcam11	F	B2B B2C	entrepreneur daughter	11
Ccma20	FA	B2B	entrepreneur	20
Coma1	FA	B2B B2C	entrepreneur	1
Tcab7	FW	B2B B2C	entrepreneur	7
Ptma	FA	B2B B2C	entrepreneur	0
Vaam1	F	B2B B2C	entrepreneur	1
Tcab1	FW	B2B B2C	entrepreneur	1
Pcsc	SC	B2B	blogger	0
Dvab1	FW	B2B B2C	entrepreneur	1
Rome41	ME	B2B	community manager	41
Cisc2	SC	B2B B2C	entrepreneur	2
Elsc1	SC	B2B B2C	entrepreneur	1
Phma3	FA	B2C	entrepr. and web marketing consultant	3
Fmam49	F	B2B	sales manager	49
Dram50	F	B2B	communication manager	50
Pisc1	SC	B2B B2C	entrepreneur	1
Masc	SC	B2C	entrepreneur	0
Ilcs	SC	B2B B2C	web manager	0
Alsc5	SC	B2B	entrepreneur	5
Bmam42	F	B2B	ict manager	42
Gdsc	SC	B2C	entrepreneur	0
Brma8	FA	B2B B2C	communication manager	8
Doma50	FA	B2B	community manager	50

3.3 Analysis of websites

Nowadays for a company, small or large, the website is a very important space. For customers it is important that companies have an easily navigable website, rich in contents, that describes and communicates very well products/services and references (main customers). The corporate website is useful to expand markets, customize and build consumer loyalty.

The goal in building a website (Dubini P., Garavaglia M, 2009) can be summarized in the following points:

- *Inform*: present and promote products/services to customers;
- *Provide*: provide to customers additional product information
- *Entertain*: be sure that the navigation through contents of the website is pleasant
- *Build loyalty*: endear the visitor in order to entice him to come back to visit the website
- *Interact*: exchange information with customers to satisfy them and improve the product/ service

In particular, in the website analysis we focused on the following features:

- *Languages (Lang.)*. A website, in multiple languages, indicates that the company operates also in foreign markets and then in a global contexts. It is a company that needs to communicate a lot and so it can be involved in using social media. In the column of the Table 4 "1" means that the website is developped only in Italian language.
- *Multimedia (Mult.)*. It takes into account the integration of various elements like text-graphics-images-audio and video. There are websites with only pictures and websites with also movies. An enterprise that use multimedia element is predisposed to use interactive tools.
- *Contact Form/reserved area*. We tried to understand if the website contains points of contacts with customers and in particular if there is a contact form or a restricted area to communicate with customers, to attract them on its website and to stimulate some contributions.
- *Presence of tools 2.0*. To see if the company uses specific interactive and collaborative tools and if it is ready to start some trials of type 2.0.
- *Extra communication (E.com.)*. If the company, in promoting its products and services, takes in consideration other topics such as the culture and emerging issue/opportunities of the territory. It is important the richness of contents of the website and the ability to collect, organize and update information.

The results obtained from the analysis of websites of the sample of companies are shown in Table 4.

In Table 4 tools 2.0 are marked with a single character enclosed in parentheses: Facebook (f), Blog (b), Forum (r), Chat (c), Wiki (w), Twitter (t), Linkedin (l), Youtube (y), Flicker (k), Pinterest, (p), News (n), Skype (s), Rss (r), Mail (m), E-commerce (e), Tg Aziendale (a), Google+ (g), Issuu (i).

Table 4 - Analysis of features of websites

Company	Lang. (no.)	Mult.	Contacts	Tools 2.0	E. com.
Agme15	1	yes	yes	y,f,l,k	no
Mtam2	5	images	no	f	no
Mosc	1	images	yes	f	no
Smma	5	images	no	f,l,s	yes
Lpam20	1	images	no	f,e	no
Abma32	5	yes	yes	f,e	yes
Fpam16	1	images	no	f, s	no
Fbab46	1	yes	yes	b,f,y,p	yes
Cume7	4	images	yes	s	no
Egab15	1	yes	yes	f,y,p	no
Acam27	4	yes	yes	f,t,y	no
Clam8	2	images	yes	f	yes
Kcab3	1	yes	yes	f,y,b,t	yes
Yesam16	3	yes	yes	f,y,s	no
Saab8	1	images	yes	f	no
Omma	2	images	yes	b,f	yes
Inme50	5	Yes	no	f,t,l	no
Cmme16	2	images	no	f	no
Fbma2	2	images	yes	f	no
Mhsc7	5	yes	yes	f,t,k,l,e	yes
Msam48	2	images	yes	l,y,t,g+	no
Kaam6	2	images	no	f,y	no
Aaam15	2	images	no	f	no
Tfsc12	1	images	no	b,f,y	yes
Deme1	3	yes	yes	y	no
Gcam11	2	images	yes	f,t,y	no
Ccma20	1	yes	no	b,f,y,t,pc,k	yes
Coma1	1	images	no	f	no
Tcab7	1	images	no	b,f	no
Ptma	3	images	yes	f,n	no
Vaam1	1	images	yes	f,e	no
Tcab1	3	images	no	b,f	no
Pcsc	1	images	no	b,t,f,l	yes
Dvab1	2	yes	yes	y	no
Rome41	1	yes	no	b, r,f,t	yes
Cisc2	1	images	yes	b,f,t,y	no
Elsc1	1	yes	yes	f,t,l	no
Phma3	1	images	yes	f,t,y,g+	no
Fmam49	5	images	no	f,y	no
Dram50	5	images	yes	f,y,n	yes
Pisc1	1	images	no	f,t,l	no
Masc	1	images	yes	f,s	no
Ilcs	1	images	no	f,l,t	no
Alsc5	1	images	no	f,t	no
Bmam42	2	images	yes	f,t,i	no
Gdsc	1	images	no	b,f,t,y	no
Brma8	3	yes	yes	f,b,f,t,y	no
Doma50	2	yes	no	b,f,r,t,l,y	yes

Data obtained can be summarized as follows (Table 5).

Table 5 - Summary of results.

Item	Value
Companies with a website	100%
Websites with 2 or more languages	52%
Website with only a language	48%
Websites with pictures and movies	31%
Websites only with pictures	69%
Absence of multimedia elements	0%
Interactivity with customers	56%
Richness of contents	25%
Presence of elements 2.0	86%

From Table 5 we can see as different companies (52%) present the website at least with another language (usually English). All 48 companies analysed have a website and all show some media elements.

A high percentage of companies use some elements 2.0 (86%). However the presence of tools 2.0 does not necessarily make the company more interactive. Often, in fact, these components are inserted in websites because it is a trend without an active use.

From a previous research (Consoli, 2010), made in 2009-2010, on 270 companies belonging to an Italian association of small enterprises, the following results were obtained (Table 6 and Table 7).

Table 6 - Percentage of enterprises with websites. Source: own.

SMEs	Percentage of enterprises
With websites	72,41% (2,30% with only contacts page)
Without websites	22,99%
Invisible on the web	4,60%

Table 7 - Presence of elements 2.0 in the website. Source: own.

Presence of elements 2.0 in the website	Percentage
Nothing (showcase website)	95,79%
Some elements 2.0	4,21%

As we can see from Table 6, the percentage of enterprises with websites was quite low (72.4%) and there was still 4.6% of companies that had not yet a web space.

From Table 7 it is possible to see that the majority of companies, about 96% had not yet incorporated in their website elements of web 2.0. So over a period of 2-3 years, the situation has considerably improved.

3.4 Analysis of the answers to a questionnaire

This session will analyse the responses to the questionnaire sent to companies of the sample. Entrepreneurs or marketing/communications/ICT managers replied to the questionnaire and in few cases, the community manager. In almost all examined companies, websites have been developed by an external agency. Sites that use the Content Management System (CMS) technology are structured in separate sections easily accessible by appropriate credentials (username and password) and modifiable/upgradeable both in contents and in pictures.

Several companies in our sample manage and update their websites inside, although they have been developed by external experts.

In next paragraphs we describe the main findings from the questionnaire responses provided by the companies.

Who manages the corporate website? The results to this question are shown in Table 8.

Table 8 - Subjects who manage the website.

Subject	Percentage
Administrative	0 %
Marketing	5,8%
Commercial	1,9%
Sales	0,0%
Employee	5,8%
CIO	13,5%
Entrepreneur	25,0%
Family of entrepreneur	5,8%
Communication	1,9%
External consultant	32,7%
Foreign agency	1,9%
Web master	3,8%
Nobody	1,9%

As we can see from Table 8 the subjects inside/outside the company who manage the website are: Consultant/external agency (32.7%), Entrepreneur (25%), Chief Information Officer (CIO) (13.5 %), family of the entrepreneur (5.8%), employee (5.8%), marketing area (5.8%), internal web master (3.8%), commercial area (1.9%). The percentage of owner is high because in this research many micro enterprises with only the owner without employees or composed by the owner and a few employees have been analysed. Many enterprises commit the development and the management of the website to a web agency or an external consultant. In the case of an internal management, this is made by the son/daughter of the owner or by an internal employee, who works in a marketing/communication/ICT area.

The management of the website, in 34.6% of companies, is made outside (external consultant or foreign agency), while the remaining 65.4% is made inside the company. The 54% of analysed companies invests on SEO (Search Engine Optimization), that optimizes the research on the web via specific keywords. Nowadays the investment in SEO it is important especially if the company wants   attract visits to website (lead generation). Google uses semantic algorithms increasingly complex to lead enterprises in the first lines of searching pages. To achieve this goal a good SEO consultant is necessary.

The 80% of companies has some elements of web 2.0, the 11% will invest in the future in virtual channel 2.0, the 9% is still not convinced to invest. These results differ slightly from the value of the 86% that we obtained from the direct analysis of the website. This depends on the fact that the person who answered to the questionnaire may not be aware of the fact that on the corporate website there is a link to some interactive channels.

Who manages the Web 2.0? The results obtained from the responses of the companies that use elements 2.0 in their corporate websites are shown in Table 9.

Table 9 - Subjects who manage social channel 2.0 of the website.

Subject	Percentage
Administrative	0%
Marketing	12%
Commercial	8%
Sales	0%
Generic Employee	7%
CIO	4%
Entrepreneur	27%
Family member	8%
Communication	4%
External consultant	17%
Web master	2%
Nobody	11%

As we can see from the Table 9, the elements of web 2.0 are managed in most cases by owner (27%), external consultant (17%), marketing manager (12%), son/daughter of the entrepreneur (8%), trade manager (8%) or by employees working in other areas. In the sample of 38 companies that use elements of web 2.0, 34 internally manage these virtual channels and only 4 have an external consultant.

Even if some communities 2.0 are initially developed from external web agencies, the management of these interactive and collaborative tools is made inside the company. These values are different from the case of external consultants who manage websites. This modality suggests that social media are interfaces more user-friendly.

Regarding social media most used in different websites, the results are shown in Table 10.

Table 10 - Percentage of social media more used.

Tool	Percentage	Tool	Percentage
Facebook	79%	News	4%
Twitter	37%	Rss	4%
Youtube	37%	Chat	2%
Blog	25%	Google+	2%
Linkedin	19%	Issuu	2%
Skype	10%	Picasa	2%
E-Comm	8%	Wiki	0%
Flicker	6%	Mail	0%
Pinterest	6%	Tg Aziendale	0%
Forum	4%		

As we can observe from Table 10, social media most used are Facebook (79%), Twitter (37%), YouTube (37%), Blog Company (25%), Linkedin (19%).

Interactive tools considered most efficient are the following (Table 11).

Table 11 - Percentage of interactive tools more efficient.

Tools	Percentage	Tools	Percentage
Facebook	88%	Skype	2%
Youtube	44%	Mail	2%
Twitter	29%	Picasa	2%
Blog	25%	Chat	0%
Linkedin	17%	Wiki	0%
Flicker	6%	E-Comm	0%
Forum	4%	Enterprise TV	0%
Pinterest	4%	Google+	0%
Rss	4%	Issou	0%
News	2%		

In the first places, as more efficient tools, there are Facebook (88%), YouTube (44%), Twitter (29%), Linkedin (17%).

The reasons of the companies that use social media (Table 12) are mainly due to the desire to acquire new customers (73%), to make promotions (54%) and to increase the company's visibility (50%).

Table 12 - Motivations for companies to use social media.

Motivation	Percentage
Interactive channel	6%
Visibility	50%
Promotion	54%
Customers	73%
Merchandising	2%
E-Commerce	6%
Contacts	8%
Foreign	2%
Communication	0%
Low Cost Investiments	0%
Increase of ranking	0%
Curiosity	4%

In the future, many enterprises think to consolidate its presence in social networks (67%) and in some cases to start with some experiments of e-commerce (29%) or to enhance the advertising (15%) (Table 13).

Other data obtained from the research are the following: the 69% of enterprises said to have interactive channels with customers and mostly use e-mail, phone, newsletter and Facebook, the 31% claimed to not have yet activated virtual channels with customers, the 40% claims to have contact with customers even after the sale while the 60% is not active in sales service. The 38% makes some statistics on consumer preferences and tastes but nobody still uses specialized software of opinion mining to analyse customer reviews. Few people think to do so in the future. The 63% of respondents uses mobile devices for business activities. The 85% of enterprises said to not be afraid of online reputation. Most of the companies has not yet implemented web 2.0 tools into their websites.

Table 13 - Future actions of enterprises.

Future actions	Percentage
Consolidation of social networks	67%
Advertising	15%
E-commerce	29%
Facebook in other languages	2%
Youtube	2%
Integration of various websites	2%
Sales	0%
Do not enter in social channels	0%
Marketing	0%
Customer care	6%

4. Discussion on Questionnaire Responses

The results of the questionnaire show an interest, in companies, to the potential offered by Web 2.0 (development of new products, opening of new sales channels, management of the relationship with customers before and after the sale). Build and manage relationships and dialogues with customers on the network is not easy and it is necessary to dedicate time and resources. For many enterprises, despite the willingness to interact and collaborate, the communication is still one-way and not two-way and interactive. Most of companies of the sample use web channels as an extension of traditional channels and then as a communication channel to promote their offer.

It is not always true that the most advanced companies that use social channels are those that have experiences in network technologies. These tools, however, are definitely more used by enterprises that have, as target, younger customers who use a lot social networks.

B2B companies, sometimes uses virtual interactive channels to raise the ranking or the position on search engines (cases: Alsc5, Bmam42, Inme50). Small enterprises, generally, are supported by external agencies in developing the website and the structure of Facebook and Flickr communities but a lot of these companies, gradually, manage by themselves, virtual channels because are very user-friendly (cases: Kaam16, Siam16, Ptma, Gcam11, Fbma2, Kcab3). Instead the management of static websites, especially those traditional non-CMS is always entrusted to a web agency or to an external consultant (cases: Ccam20, Alsc5, Vaam1, Dvab1, Cume7, Dmme3, ...).

Several companies begin to experiment and to include in their websites some interactive elements 2.0 (cases: Agme15, Mtam2, Fbma2, Cisc2, Acam27), some enterprises think to invest in these tools in the future (cases: Cume17, Clam8, Saab8) and others are not interested (cases: Dmme3, Elme17, Mcme20). This last case is relative to companies that operate in the B2B market. The most of the companies analysed, except for a few cases (Cmma1, Dmme3), is convinced of the high potential of the website and social networks. Some company plans to implement in the future the model 2.0 (cases: Cume7, Acam27).

Many companies are beginning to invest in SEO and optimize   search keywords to associate to the "announcements" of the website (cases: Doma50, Phma3, Alsc5, Bmam42, ...).

The reason of the company to enter   in social networks are: visibility, promotion, advertising, acquisition of new leads (lead generation) (Gahan, 2012) for transform them in

future customers. A restriction which all companies of the sample manifest is to not understand how many of contacts are transformed in real customers.

In the future many people think to consolidate its presence on social media, others think to associate virtual channels in the activation of e-commerce section.

Most companies give a small weight to post-sale (no. 21/48); some companies, for this goal, use e-mail, phone, newsletter and others have implemented a private community to increase the customer loyalty (case: Doma50).

At this stage of the questionnaire, many enterprises claim to not be afraid of online reputation. Most of these companies think to implement the model of Enterprise 2.0 in the future.

The more structured companies have a Chief Information Officer (CIO), which manages social media (cases: Mhsc7, Brma8, Cmm16, Bmam42, Fmam49), in other cases the manager is an employee/manager of marketing, communications, commercial areas (cases: Doma50, Egab15, Siam16, Agme15) or the owners'son/daughter (cases: Ptma, SmmA, Mhsc7, Abma32, Gcam11). In the case of social networks, the size of company is not important. There are larger companies of the sample that do not use web 2.0 channels (cases: Inme50, Msam48) and other ones smaller which use them (cases: smma, ptma, pcsc, masc, gdsc).

Smaller companies, without organizational-bureaucratic constraints, create and manage in-house social network, while larger companies are supported from consultants and care more the content and the management of virtual communities.

In small companies, it is also easier the integration of mobile devices such as tablets, smartphones (IT consumerization) for the lack of restrictive policies in their information systems. In larger companies, the integration is more difficult to achieve for the presence of more restrictions in the authorized access.

5. Conclusions

The new Enterprise 2.0 (Consoli 2012b, 2013) is a model that, at present, is in embryonic stage, even in large enterprises. It is a model still in an experimental state almost unknown scientifically, from the point of view of dynamic processes, methods and variables to consider. It is a model "in progress", in developing methods to assess performances and the Return on Investment (ROI). It is based on revolutionary concepts such as sharing, collaboration and co-creation, and then on a new philosophy of doing business.

Since it is not yet an established model it is evident that there is not a large academic literature on the topic and there are not yet present interpretative models which contextualize the topic in its entirety.

The previous models of performance evaluation and measurement of ICT readiness (Balocco et al., 2006; Spinelli, 2009) consider the ICT maturity (infrastructure and software) inside the company and the ICT strategic vision. In future, in the new business model of Enterprise 2.0, will be important to take in consideration the dimension of interactive and collaborative tools of web 2.0 that support the exchange of information with all stakeholders (suppliers, customers, other companies).

The analysis of cases (by websites and questionnaire), in a sample of micro and small enterprises, has highlighted as the model of Enterprise 2.0 can also be applied in this type of companies. The analysis shows that small enterprises have understood the potentiality of Web 2.0 and increasingly feel the need to be present on social networks, although this awareness does not always imply the mastery of logic and languages of these channels. For the implementation of the new business model, it is not enough to integrate some web 2.0 tools (chat, forums, blogs, social media, ..) on the corporate website, but it is necessary to introduce a series of changes in the company from the point of view both organizational and

technological. The central problem, is to use these tools in a coordinated and correct way and, for this reason, it is necessary to develop an integrated Enterprise 2.0 model based on an efficient organizational structure.

A large size or a pre-existing technological equipment inside the company does not imply a good implementation of the model. Instead it is important the involvement of entrepreneur or manager and the presence of an internal expert facilitator ("pivot") who stimulates the adoption and the use of these interactive channel starting from a specific limited area of the company.

If micro and small enterprises monitor and control all stages of a correct use of these interactive and collaborative tools they, for its flexibility and thinness in internal business processes, could gain a competitive advantage over the medium and large companies.

Data obtained in this research analysis can be used as a starting point for further quantitative investigations involving a larger sample of companies and using specific statistical tools. In this way it will be possible to validate and generalize some assumptions regarding the correct use of social media 2.0, by micro and small enterprises, in reaching business goals and so it will be possible to design a new business model based on the concept of an interactive and dynamic enterprise.

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NEW FINANCIAL DEVELOPMENT INDICATORS: WITH A CRITICAL CONTRIBUTION TO INEQUALITY EMPIRICS

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Abstract

The employment of financial development indicators without due consideration to country/regional specific financial development realities remains an issue of substantial policy relevance. Financial depth in the perspective of money supply is not equal to liquid liabilities in every development context. This paper introduces complementary indicators to the existing Financial Development and Structure Database (FDSD). Dynamic panel system GMM estimations are applied. Different specifications, non-overlapping intervals and control variables are used to check the consistency of estimated coefficients. Our results suggest that from an absolute standpoint (GDP base measures), all financial sectors are pro-poor. However, three interesting findings are drawn from measures of sector importance. (1) The expansion of the formal financial sector to the detriment of other financial sectors has a disequalizing income effect. (2) Growth of informal and semi-formal financial sectors at the expense of the formal financial sector has an income equalizing effect. (3) The positive income redistributive effect of semi-formal finance in financial sector competition is higher than the corresponding impact of informal finance. It unites two streams of research by contributing at the same time to the macroeconomic literature on measuring financial development and responding to the growing field of economic development by means of informal financial sector promotion and microfinance. The paper suggests a practicable way to disentangle the effects of the various financial sectors on economic development. The equation of financial depth in the perspective of money supply to liquid liabilities has put on the margin the burgeoning informal financial sector in developing countries. The phenomenon of mobile banking is such an example.

1. Introduction

Poverty and inequality remain daunting challenges in developing countries despite close to three decades of financial reforms. In spite of this substantial policy relevant concern, inequality related studies have not been critically engaged in these countries due to lack and/or scarcity of relevant data (Kai & Hamori, 2009). Accordingly, many developing countries embarked on a chain of structural adjustment policies in the financial sector as part

of reforms in the economic sector with the ambitious goals of mitigating inequality, enhancing economic prosperity and improving financial efficiency (Janine & Elbadawi, 1991). These reforms led to the adoption of some financial indicators that do not exhaustively calibrate the policy needs of poverty and/or inequality mitigation (Asongu, 2013a).

The employment of financial development indicators without due consideration to country/regional specific financial development realities remains an issue of substantial policy relevance. Usage of some indicators for instance is based on the presumption that they are generally valid (Gries, Kraft & Meierrieks, 2009)[1], notwithstanding recent empirical evidence that not all indicators may matter in financial development (Asongu, 2013b). Furthermore, the absence of a consensus on the superiority of financial development indicators, especially the widely used proxy for financial depth (Gries, Kraft & Meierrieks, 2009) is deserving of research attention.   As far as we have reviewed related literature, we suppose the absence of studies that focus on the quality of financial development indicators (with respect to contextual development concerns) is enough inspiration to search for the missing link. It is the objective of this paper to verify the validity of the financial depth indicator as applied to developing countries and hence, decompose it into new measures that substantially tackle financial development challenges in developing countries. The underlying impetus of the study is the misleading assumption that, money supply (financial depth) is a proxy for liquid liabilities in developing countries. This paper will therefore suggest a practicable way to disentangle the effects of the various financial sectors on economic development. We shall develop testable hypotheses and propositions for more refined financial development indicators and empirically verify their validity in the finance-inequality nexus. GDP and Money-supply oriented ratios are developed for each sector of the financial system. Our conception of the financial system goes beyond the realm of that expressed in the International Financial Statistics' definition: it integrates the informal sector, hitherto a missing component in the existing measurement of monetary supply (M2).

The contribution of this paper to the finance-inequality literature is threefold. (1) It provides a macroeconomic assessment of the income-redistributive incidence of the informal financial sector. (2) The existing measurement of financial depth is disentangled to include a previously missing component and, the income-equalizing effect of each component is examined independently. (3) Financial sector importance measures are introduced to complement GDP-based indicators in order to investigate the dynamics of financial sector competition in the finance-inequality nexus.

The outcome of this study could be interesting to policy makers and researchers because, it unites two streams of research. It contributes at the same time to the macroeconomic literature on measuring financial development and, responds to the growing field of economic development by means of informal financial sector promotion and microfinance (Asongu, 2013cd, 2014a). The absence of sound fundamentals in a financial indicator might lead to inappropriate inferences and unhealthy policy recommendations. The rest of the paper is structured in the following manner. Section 2 examines the problem statement and the proposed solutions from the literature. Data and methodology are presented and outlined respectively in Section 3. Presentation of results, discussion and policy recommendations are covered in Section 4. We conclude with Section 5.

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[1] Gries, Kraft & Meierrieks (2009) state: "*In the related literature, several proxies for financial deepening have been suggested, for example, monetary aggregates such as M2 on GDP. To date there is no consensus on the superiority of any indicator*" (p. 1851).

2. Problem statement and solutions

A shortcoming in the definition of the financial system by the International Monetary Fund (IMF) is core to this problem statement because it is more adapted to developed countries. According to the International Financial Statistics (IFS), the financial system consists of the formal and semi-formal sectors; that is, deposit money banks and other financial institutions (see lines 24, 25 and 45 of the IFS, 2008). While this definition could be quasi-true for developed countries, it fails to take account of the informal financial sector in undeveloped countries. This begs the concern of knowing the role of the informal sector (in economic development).

2.1 The International Financial Statistics' (2008) conception of the financial system

As detailed in Table 1 below inspired by Steel (2006), formal finance refers to services that are regulated by the central bank and other supervisory authorities. Semi-formal finance enables a distinction between formal and informal finance. This is the segment of finance that is in a formal financial environment but not formally recognized. A good example is microfinance. Informal finance is one that is not arranged via formal agreements and not enforced through the legal system. From the fourth column, the last two types of 'saving and lending' are very common in developing countries, particularly among the financially excluded or those on low incomes. Unfortunately, the IFS definition completely marginalizes the last types. We postulate that, based on the weight of available evidence, informal finance should no longer be undermined in the definition of the financial system.

Table 1 – Segments of the financial system by degree of formality in Paper's context

Paper's context			Tiers	Definitions	Institutions	Principal Clients
Formal financial system		Formal Financial sector (Deposit Banks)	Formal banks	Licensed by central bank	Commercial and development banks	Large businesses, Government
Semi-formal and informal financial systems	IMF Definition of Financial System from International Financial Statistics (IFS)	Semi-formal financial sector (Other Financial Institutions)	Specialized non-bank financial institutions		Rural banks, Post banks, Saving and Loan Companies, Deposit taking Micro Finance banks	Large rural enterprises, Salaried Workers, Small and medium enterprises
			Other non-bank financial institutions	Legally registered but not licensed as financial institution by central bank and government	Credit Unions, Micro Finance NGOs	Microenterprises, Entrepreneurial poor
	Missing component in IFS definition	Informal financial sector	Informal banks	Not legally registered at national level (though may be linked to a registered association)	Savings collectors, Savings and credit associations, Money lenders	Self-employed poor

Source Author

2.2 Rethinking financial development indicators

As far as we have reviewed, but for Beck, Demirgüç-Kunt & Levine (1999), the absence of studies that underline the quality of financial development indicators with regard to contextual development is a significant missing component in the financial development literature. Some studies have identified the issue, but fallen short of addressing it. Hence, it has been well documented that the financial depth indicator as applied to developing countries is very misleading as it does not integrate the realities and challenges of financial intermediary development (Demetriades & Hussein, 1996; Khumbhakar & Mavrotas, 2005; Ang & McKibbin, 2007; Abu-Bader & Abu-Qarn, 2008). Therefore, a motivation of this work hinges on an existing debate over the contextual quality of financial development indicators. Accordingly, as we shall cover the first generation solutions before proposing second generation solutions.

2.2.1 First generation solutions

As far as we have reviewed, first generation solutions consist of a class of studies that has identified the issue with the IFS definition of the financial system and tried to address it superficially without given due consideration to the informal financial sector. The kernel of this categorization is that, while trying to address the issue, informal finance is still marginalized. Money supply (M2) which represents the money stock has been widely employed as a standard measurement of liquid liabilities in many studies for decades (World Bank, 1989; King & Levine, 1993). While, this indicator is quasi-true in the developed world, its application to developing countries has faced substantial criticisms. Critics have stressed that in developing countries; an improvement in M2 may reflect an extensive use of currency rather than an increase in bank deposits (liquid liabilities). In attempts to address this problem in empirical literature, a number of solutions have been suggested.

Firstly, in a bid to curtail this shortcoming, Demetriades & Hussein (1996) have proposed the subtraction of currency outside banks from M2 when measuring liquid liabilities in developing countries. Abu-Bader & Abu-Qarn (2008) amongst others have recently followed suit in adjusting M2. However, these adjustments have not emphasized financial sector importance, because the informal financial sector has still been ruled-out as marginal in the adjustment.

Secondly, some authors have sought to address the concern by determining a variable that broadly takes account of financial depth. They have used the first principal component of money supply and a combination of other financial measures (Khumbhakar & Mavrotas, 2005; Ang & McKibbin, 2007; Gries, Kraft & Meierrieks, 2009). In so doing, they have decreased the dimensionality of the set of variables without losing much information from the initial dataset on the one hand; and on the other hand, decreased problems related to the quality of M2 as a proxy for liquid liabilities. However, the main drawback of this approach is that for the most part, M2 is mixed with concepts of financial activity (private domestic credit), financial size (deposit bank assets/central bank assets plus deposit bank assets), financial allocation efficiency (bank credit/bank deposits)…etc.

2.2.2. Second generation solutions

We propose second generation solutions in Table 2 below which is a practical way of disentangling the effects of formal, semi-formal and informal financial development sectors contained in M2. Propositions in Table 2 are based on a rethinking of the IFS definition of the financial system. Hence, the new definition integrates a previously missing informal financial sector component into the definition of the financial system. It disentangles the existing measurement into formal and semiformal financial sectors. Moreover, it proposes measures of

financial sector importance that appreciate evidence of financial sector competition. These second generation solutions are consistent with a growing stream of literature on financial sector competition (Asongu, 2014bcd).

Table 2 – Summary of propositions

Propositions	Name(s)	Formula	Elucidation
Panel A: GDP-based financial development indicators			
Proposition 1	Formal financial development	Bank deposits/GDP	Bank deposits[2] here refer to demand, time and saving deposits in deposit money banks.
Proposition 2	Semi-formal financial development	(Financial deposits – Bank deposits)/ GDP	Financial deposits[3] are demand, time and saving deposits in deposit money banks and other financial institutions.
Proposition 3	Informal financial development	(Money Supply – Financial deposits)/GDP	
Proposition 4	Informal and semi-formal financial development	(Money Supply – Bank deposits)/GDP	
Panel B: Measures of financial sector importance			
Proposition 5	Financial intermediary formalization	Bank deposits/ Money Supply (M2)	From 'informal and semi-formal' to *formal* financial development (formalization)[4] .
Proposition 6	Financial intermediary 'semi-formalization'	(Financial deposits - Bank deposits)/ Money Supply	From 'informal and formal' to *semi-formal* financial development (Semi-formalization)[5].
Proposition 7	Financial intermediary 'informalization'	(Money Supply – Financial deposits)/ Money Supply	From 'formal and semi-formal' to *informal* financial development (Informalisation)[6].
Proposition 8	Financial intermediary 'semi-formalization and informalization'	(Money Supply – Bank Deposits)/Money Supply	Formal to '*informal and semi-formal'* financial development: (Semi-formalization and informalization) [7]

N.B: Propositions 5, 6, 7 add up to unity (one); arithmetically spelling-out the underlying assumption of sector importance. Hence, when their time series properties are considered in empirical analysis, the evolution of one sector is to the detriment of other sectors and vice-versa.

2.3 Scope and positioning of the paper

Poverty and inequality undoubtedly remain serious challenges to economic and human developments. Financial repression and its pervasiveness of mitigating economic growth has been elaborately covered by a substantial bulk of the literature (McKinnon, 1973; Shaw, 1973). In the 1980s and 1990s, most African countries engaged in a series of structural and policy adjustments in the financial sector as part of economic reforms with the goal of given

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[2] Lines 24 and 25 of the IFS (October 2008).

[3] Lines 24, 25 and 45 of the IFS (2008).

[4] In undeveloped countries M2 is not equal to liquid liabilities (liquid liabilities equal bank deposits: bd). Whereas, in undeveloped countries bd/M2<1, in developed countries bd/M2 is almost equal to 1. This indicator measures the rate at which money in circulation is absorbed by the banking system. Financial formalization here is defined as the propensity of the formal banking system to absorb money in circulation.

[5] This indicator measures the level at which the semi-formal financial sector evolves to the detriment of formal and informal sectors.

[6] This proposition shows the rate at which the informal financial sector is developing at the cost of formal and semi-formal sectors.

[7] The proposition appreciates the deterioration of the formal banking sector to the benefit of other sectors (informal and semi-formal). From common sense, propositions 5 and 8 should be perfectly antagonistic, meaning the former (formal financial development at the expense of other sectors) and the later (formal sector deterioration) should display a perfectly negative coefficient of correlation (See Appendix 2). Proposition 7 has a high positive correlation with Proposition 8 and therefore, only the former will be used in the empirical section.

impetus to economic growth, as well as improving overall economic and financial efficiency (Janine & Elbadawi, 1992). Hitherto, owing to data issues on income-inequality for Africa, only two studies to the best of our knowledge have addressed the finance-inequality nexus in the continent (Kai & Hamori, 2009; Batuo, Guidi & Mlambo, 2010).

A common drawback of these two works is the very limited application of the concept of financial development, which we have broadened with the propositions in the previous section. Restricting the concept of finance to only its dynamics of depth (Kai & Hamori, 2009; Batuo, Guidi & Mlambo, 2010) and activity (Batuo, Guidi & Mlambo, 2010) does not paint a full picture of the African inequality-finance nexus for the following reasons.

Firstly, as we have earlier discussed, a distinction between money supply and liquid liabilities in the conception of financial depth is very important in separating the income redistributive-effect of 'bank mobilized funds' from that of overall money supply[8].

Secondly, it is our conviction that the African finance-inequality nexus cannot be effectively assessed without taking into consideration the semi-formal and informal sectors which are more close to the poor segments of the population than the formal financial sector.

Thirdly, contrary to the motivation of Batuo, Guidi & Mlambo, (2010), the effect on inequality of first and second generation financial reforms in Africa cannot be limited to formal finance.

In light of the above points, drawing from the experience of a continent that has been implementing development financial reforms, motivated by the propositions highlighted above and shortcomings of existing empirical literature on the African inequality nexus, the empirical section of this paper will provide additional dimensions to the debate. Hence, the following hypotheses will be tested in the empirical section.

Hypothesis 1: *The informal financial sector (a previously missing component in the definition of money supply) is good for the poor.*

Hypothesis 2: *Disentangling different components of the existing measurement (financial system) into formal (banking sector) and semi-formal (other financial institutions) financial sector indicators contribute significantly to the finance-inequality nexus debate.*

Hypothesis 3: *Introducing measures of sector importance provides interesting dynamics of financial sector competition in the finance-inequality nexus.*

3. Data and Methodology

3.1 Data

We assess a sample of 28 African countries with annual data from African Development Indicators (ADI) of the World Bank (WB) for the period 1996 to 2010. The limitation to a 15 year span is based on constraints in data availability. Summary statistics (and presentation of countries), correlation analysis and variable definitions are presented in Appendix 1, Appendix 2 and Appendix 3 respectively. The summary statistics of the variables used in the panel regressions show that, there is quite a degree of variation in the data utilized so that one should be confident that reasonable estimated relationships should emerge. Both the standard deviations and minimum/maximum values validate this assertion and further lend credit to the

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[8] This is because, a great chunk of the monetary base in the African continent circulates outside the banking sector, therefore an increase in money supply may reflect the increase in the use of currency rather than a strengthening of financial system deposits.

inappropriateness of a parametric model that assumes a particular functional distribution. The purpose of the correlation matrix is to mitigate issues resulting from overparametization and multicollinearity. Based on the correlation coefficients, there do not appear to be any serious problems with respect of the relationships to be estimated.

The indicator for inequality is the GINI coefficient which measures disparity among values of the frequency income-distribution. A value of zero represents perfect equality while a coefficient of one expresses maximal inequality. The GINI coefficient which is commonly used as a measure of inequality in income or wealth has found application in diverse disciplines studying inequality: sociology, economics, health science, agriculture…etc (Batuo, Guidi & Mlambo, 2010).

Control variables include: inflation, government expenditure, economic prosperity (GDP growth), population growth, foreign-aid, human development and globalization (trade and foreign direct investment: FDI). We expect: high inflation to fuel inequality (Albanesi, 2007) while, low inflation should reduce it (Bulir, 1998; Lopez, 2004); government expenditure (not tainted by corrupt malpractices) to mitigate inequality and; GDP growth to reduce inequality conditional on even-distribution of the fruits of economic prosperity. The impact of foreign-aid on inequality is contingent on the quality of institutions. The incidence of population growth on inequality should to be positive (AfDB, 2012, p.3). We expect globalization both from trade and capital openness perspectives to have a negative income- redistributive effect: consistent with recent African inequality literature (Kai & Hamori, 2009, p.15). However from intuition, trade can either increase or decrease inequality depending on the proportion of the poor relying on agricultural exports. On the other hand, cheap imports could increase savings and hence, indirectly improve the income-distribution of the poor. In the same vein, too much imports of 'substitution goods' produced by domestic industries could fuel income-inequality if majority of the population in the lower-income brackets depend substantially on the affected industries for subsistence income. The impact of human development on inequality depends on the proportion of the poor in the following three dimensions (with respect to national average): GDP per capita, life expectancy and, literacy rate.

3.2 Methodology

Estimation with dynamic panel data has some important advantages and one disadvantage relative to cross-country analysis (Demirgüç-Kunt & Levine, 2008; Asongu, 2013e). On the first positive note: (1) it makes use both of time-series and the cross sectional variation in the data; (2) in cross-country regressions, the unobserved country-specific effect is part of the error term, so that correlation between the error term and the independent variables results in biased estimated coefficients. More so, in cross-country regressions, if the lagged endogenous variable is included among the explanatory variables, the country-specific effect is certainly correlated with the regressors. A means of controlling for the presence of unobserved country-specific effects is to first-difference the regression equation to eliminate the country-specific effect, and then employ instrumental variables to take account of endogeneity.

The endogeneity issue is the second edge of the dynamic panel estimation technique. Uncontrolled endogeneity can significantly bias estimates and lead to misleading inferences. Dynamic panel data analysis accounts for this endogeneity issue by using lagged values of exogenous variables as instruments[9].

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[9] On a more general note, an indicator is endogenous when it is correlated with the error term. Endogeneity can result from simultaneity or omitted variables, autoregression with autocorrelated errors and measurement error. In addition, a loop of causality between the independent variable and the dependent parameter results in endogeneity.

The principal concern associated with dynamic panel data analysis is the usage of data-average over shorter time spans. By implication, the estimated results reveal short-run impacts and not long-term effects, which should be kept in mind when interpreting and discussing results. In the context our paper, we shall overcome this issue by using both 'full data' and 'data averages' in terms of non-overlapping intervals. For robustness purposes, we shall use two-year[10], three-year[11] and five-year[12] non-overlapping intervals.

The dynamic panel regression model is expressed as follows:

$$Iq_{i,t} = \sigma_0 + \sigma_1 Iq_{i,t-1} + \sigma_x P_{i,t} + \sigma_y W_{i,t} + \eta_i + \xi_t + \varepsilon_{i,t} \tag{1}$$

where 't' stands for the period and 'i' represents a country. Iq is the inequality rate; P, the vector of propositions with $1 < x < 9$. $W_{i,t}$ is a vector of control variables with $9 < y < 17$, η_i is a country-specific effect, ξ_t is a time-specific constant and $\varepsilon_{i,t}$ an error term. Estimates will be unbiased if and only if, the independent variables above demonstrate strict exogeneity. Unfortunately, this is not the case in the real world because: (1) while the *propositions* could have substantial incidences on inequality, the reverse effect cannot be ruled-out because, the redistributive quality of income in an economy also has some bearing on financial sector development[13]; (2) the *propositions* could be correlated with the error term ($\varepsilon_{i,t}$); (3) country- and time-specific effects could also be correlated with other variables in the model, which is often the case with lagged dependent variables included in the equations. Hence, arises an issue of endogeneity owing to endogenous *propositions*. A way of dealing with the problem of the correlation between the individual specific-effect and the lagged inequality variables involves eliminating the individual effects by first differencing. Therefore, Eq. (1) becomes:

$$Iq_{i,t} - Iq_{i,t-1} = \sigma_1(Iq_{i,t-1} - Iq_{i,t-2}) + \sigma_x(P_{i,t} - P_{i,t-1}) + \sigma_y(W_{i,t} - W_{i,t-1}) + (\xi_t - \xi_{t-1}) + (\varepsilon_{i,t} - \varepsilon_{i,t-1}) \quad (2)$$

However Eq. (2) presents another issue; estimation by Ordinary Least Square (OLS) is still biased because there remains a correlation between the lagged inequality independent variable and the disturbance term. To tackle this issue, we estimate the regression in differences jointly with the regression in levels using the Generalized Method of Moments (GMM) estimation. The procedure uses lagged levels of the regressors as instruments in the difference equation, and lagged differences of the regressors as instruments in the levels equation, thus exploiting all the orthogonality conditions between the lagged inequality variables and the error term. Between the *difference* GMM estimator (Arellano & Bond, 1991) and *system* GMM estimator (Arellano & Bover, 1995; Blundell & Bond, 1998), we choose the latter in accordance with Bond, Hoeffler & Tample (2001, 3-4). The *system* GMM has been confirmed to be better in recent poverty (Arestis & Caner, 2010) and African finance (Batuo & Kupulike, 2010) literature.

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[10] We have eight two-year non-overlapping intervals: 1996; 1997-1998; 1999-2000; 2001-2002; 2003-2004; 2005-2006; 2007-2008; 2009-2010.
[11] There are five three-year non-overlapping intervals: 1996-1998; 1999-2001; 2002-2004; 2005-2007; 2008-2010.
[12] The corresponding five-year non-overlapping intervals are three: 1996-2000; 2001-2005; 2006-2010.
[13] From intuition and common sense, increasing inequality is likely to have a more favorable impact on formal financial development; since bank accounts are mostly held by the rich.

In specifying the dynamic panel system estimation, we choose the *second-step* GMM because it corrects the residuals for heteroscedasticity. In the *first-step*, the residuals are assumed to be homoscedastic. The assumption of no auto-correlation in the residuals is crucial as past lagged *propositions* are to be used as instruments for the dependent variables. Also, the estimation depends on the assumption that the lagged values of the inequality variable and other *propositions* are valid instruments in the regression. When the error terms of the level equation are not auto-correlated, the first-order auto-correlation of the differenced residuals should be significant whereas their second-order auto-correlation: *AR(2)* should not be. The validity of the instruments is examined with the Sargan over-identifying restrictions test (OIR). In summary, the main arguments for using the *system* GMM estimation are that it does not eliminate cross-country variation, it mitigates potential biases of the difference estimator in small samples, and it can control for the potential endogeneity of all *propositions*.

Beside the control for endogeneity and unobserved heterogeneity, further robustness of our models is ensured by the following. (1) Usage of both 'full data' and 'average data' with non-overlapping intervals to capture the long-term and short-run tendencies of estimated coefficients respectively. Hence, in addition to the full dataset, we have three categories of non-overlapping intervals sub-datasets already discussed in the data section. (2) Employment of two system GMM specifications with different control variables[14].

4. Empirical Analysis

4.1 Presentation of results

From the estimates presented in Table 3, with respect to Panel A and Panel B for 'GDP-based' and financial-sector-importance measures respectively, four interpretations are common.

(1) We notice that initial values of inequality have positive significant signs. Coefficients corresponding to these initial values of inequality are less than one, suggesting that inequality in converging in Africa; an indication of potential broad and blanket inequality reduction policy measures. Discussing the speed of convergence and time required to achieve full conditional convergence will be out of scope. However, it is worthwhile highlighting that, conditional convergence is contingent on the variables we model or empirical test. Hence, based on the *propositions*, it could be inferred that countries with low inequality rates are catching-up their counterparts with higher rates (conditional on the *propositions*).

(2) But for the two-year and five-year NOI, the report of the serial correlation test used to examine the null hypothesis of no serial correlation of residual in first-difference, confirms the estimations do not suffer from serial correlation issues. While evidence for serial correlation is thin for the two-year NOI (at a 10% significance level), the AR(2) test is not feasible for the five-year NOI owing to constraints in degrees of freedom. Hence, results of the five-year NOI will be purely informative and not object of any inferences for the benefit of doubt.

(3) The Sargan OIR test for the validity of the instruments compares the sample moment conditions with their population analog. The null hypothesis of this test is the position that, the lagged differences of the *propositions* and control variables are uncorrelated with the errors in the level equations. In other words, the instruments explain inequality through no other mechanisms beside the proposed channels, conditional on other covariates (control

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[14] We had wished to use a poverty headcount indicator as the alternative measure of inequality but the available data from World Development Indicators is so scanty and/or substantially short of degrees of freedom.

variables). The overwhelming rejection of the null hypothesis of the OIR test (across specifications and panels) points to the validity of the instruments.

(4) The Wald test for the joint significance of estimated coefficients also provides appealing results at the 1% significance level.

4.2 Discussion of results

Based on Panel A of Table 3, the following conclusions could be drawn.

(1) The formal, semi-formal, and informal financial sectors all have negative incidences on inequality. This implies, all financial sectors have a positive income redistributive effect. Ultimately, improvement in financial sector shares relative to economic prosperity (GDP growth) is good for the poor. The intuition behind this interpretation is twofold. On the one hand, holding GDP growth and other things constant, financial development which is a constituent of GDP growth will mitigate poverty by its equalizing effect on income-distribution. On the other hand, if the share of financial sector development in GDP growth is greater in comparison to other macroeconomic components of GDP growth, the direct effect on income distribution will be an equalizing one. Ultimately, the equalizing income-effect of financial sector measures (that are relative to GDP) is consistent with recent African finance-inequality literature (Batuo, Guidi & Mlambo, 2010). From a broad perspective, the findings are also in line with empirical (Beck, Demirgüç-Kunt & Levine, 2004; Beck, Demirgüç-Kunt & Levine, 2007; Kai & Hamori, 2009) and theoretical (Galor & Zeira, 1993; Banerjee & Newman, 1993) literature which postulate a negative and linear relationship between financial development and income-inequality.

(2) As for the control variables, human development increases inequality while population growth mitigates it. The negative impact of human development on inequality implies a diminishing proportion of the following three dimensions (with respect to national average) to the poor: GDP per capita, life expectancy and literacy rate. The finding on population growth diminishing inequality which is not in line with AfDB (2012) confirms the expected relationship from the correlation matrix.

From Panel B of Table 3, the following could be established.

(1) Growth of formal finance at the expense of informal and semi-formal finance has an income-disequalizing effect. This is logical from common sense because, the increase in bank deposits (liquid liabilities) in the formal banking sector can only result from the fruits of the population faction in possession of bank accounts. In developing countries, this segment of the population with bank accounts constitute the upper-income and middle-income brackets. By implication, when growth in money supply (M2) or an extensive use of currency in an economy transits through the banking sector to the detriment of the informal and semi-formal financial sectors, the natural consequence is rising inequality. This conclusion could be substantiated with present-day statistics of most formal institutions concentrated in the urban areas of less developed countries. With a great proportion of the poor domiciled in rural areas without access to bank accounts, the competitive advantage of formal banking in shares of M2 is not good for the poor.

(2) When the share of the semi-formal financial sector in money supply improves to the detriment of the formal and informal sectors, the effect on the poor is positive.

(3) Growth of the informal financial sector to the detriment of the formal and semi-formal sectors is also good for the poor.

4. 3 Robustness checks

Findings of Table 3 have one particular short-coming. Discussions relevant to Propositions 3, 4 (Panel A), 5 and 7 (Panel B) are purely of informative character because they are based on

findings from the five-year NOI dataset. We earlier stated that, because the five-year NOI specification was short of a second-order autocorrelation test, inference could not be based on the findings for the benefit of doubt and justice to the system GMM approach. Consequently, we use different control variables and replicate the regressions in Table 3. The findings in Table 4 show Propositions 3 and 4 of Panel A and, Propositions 5 and 7 of Panel B are significant outside the five-year NOI specification columns. We are unable to use Propositions 5, 6 and 7 in the same equation because Propositions 5 and 7 have a correlation of -0.974 (see Appendix 2). Overwhelming failure to reject the null hypotheses of AR(2) and Sargan OIR tests points to the absence of autocorrelation and validity of the instruments respectively. Beside these positive specification points, overwhelming rejection of the null hypotheses of the Wald tests for joint significance of estimated coefficients confirms the quality of overall model specification and hence, the substance of inferences based on estimated propositions. The discussion of results in Table 3 is relevant for Table 4. However, one additional point is worth mentioning from Panel B: the inequality mitigation effect of the semi-formal financial sector is higher in comparison to the informal sector. The explanation to this is a simple one: the semi-formal sector engages in more poverty reduction initiatives than the informal sector (see Table 1).

4.4 Policy recommendations

The following policy recommendations derived from the findings are relevant to governments of sampled countries in particular and developing countries in general. (1) Encourage the establishment of formal institutions in rural communities. Why? We have found that formal banking development mitigates inequality (Proposition 1). However, formal banking development at the expense of other financial sectors increases inequality (Proposition 5). It follows that the establishment of formal institutions in rural areas dominated by the 'low-income brackets' population could have an equalizing income redistributive effect. (2) Favor the establishment of (specialized) non-bank financial institutions and informal banks, especially in rural and poor-dominated urban areas[15]. Why? Our results have shown that Proposition 3, 4, 6 and 7 have income equalizing effects. (3) Semi-formal finance is more poor friendly than informal finance, implying specialized bank and non-bank financial institutions are more pro-poor than informal banks (made-up of: savings collectors, savings and credit associations and, money lenders).

As an overall policy recommendation, the poor should be encouraged to open up bank accounts. The significance of the results demonstrates that financial development is essential in reducing income inequality in African countries. Widening access to non-formal financial intermediary markets, especially by targeting those at the lower income strata and the rural population would help reduce the persistent income gap between the rural and urban population. One possible way of improving financial access to the poor is to oriented policy towards the reduction of information asymmetries that increase the operating cost of financial institutions. Access to finance by the poor will enable productive investments (e.g in education and small manufacturing) which in time could improve equality. Particularly micro-finance (part of the semi-formal sector) should be encouraged because, at least in its initial stage, can thrive without relying heavily on government regulation or strong legal institutions that require the poor to borrow contingent on their assets.

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[15]Specialized non-bank financial institutions include: Rural banks, Post banks, Saving and Loan Companies and, Deposit-taking Micro Finance banks. Non-bank financial institutions are: Credit Unions and Micro Finance NGOs. Informal banks (Savings collectors, Savings and credit associations, Money lenders).

Table 3 – Two-step System GMM estimates (Dependent variable: Inequality)

Panel A: Impact of GDP based Measures

	Full data		2 Year NOI		3 Year NOI		5 Year NOI	
Constant	10.548***	10.556***	8.248	8.280	9.640	9.640	25.688**	25.688**
	(4.025)	(4.025)	(1.115)	(1.152)	(0.917)	(0.917)	(2.057)	(2.057)
GINI_1	0.787***	0.787***	0.840***	0.840***	0.848***	0.848***	0.446**	0.446**
	(14.91)	(14.88)	(5.982)	(6.142)	(3.939)	(3.939)	(2.567)	(2.567)
Proposition 1	-2.556*	-2.553*	-1.319	-1.332	-0.692	-0.692	-6.861	-6.861
	(-1.695)	(-1.695)	(-0.425)	(-0.443)	(-0.383)	(-0.383)	(-0.829)	(-0.829)
Proposition 2	-4.071	-3.218	-29.459	-26.562	-101.53**	-87.61**	-10.268	50.533
	(-0.137)	(-0.100)	(-0.731)	(-0.610)	(-2.279)	(-2.046)	(-0.064)	(0.323)
Proposition 3	-0.881	---	-3.803	---	-13.91	---	-60.801**	---
	(-0.235)		(-0.267)		(-0.714)		(-2.006)	
Proposition 4	---	-0.859	---	-3.641	---	-13.919	---	-60.801**
		(-0.2302)		(-0.256)		(-0.714)		(-2.006)
Economic Prosperity	0.016	0.016	0.072	0.071	0.172	0.172	-0.042	-0.042
	(0.419)	(0.419)	(0.710)	(0.683)	(1.083)	(1.083)	(-0.165)	(-0.165)
Population Growth	-0.362	-0.361	-0.334	-0.339	-1.192*	-1.192*	-2.555**	-2.555**
	(-0.964)	(-0.964)	(-0.513)	(-0.536)	(-1.871)	(-1.871)	(-2.183)	(-2.183)
Foreign Aid	-0.035	-0.035	-0.056	-0.055	-0.034	-0.034	---	
	(-1.182)	(-1.181)	(-1.411)	(-1.409)	(-0.562)	(-0.562)		
Human Development	0.077*	0.077*	0.019	0.018	---	---	21.422*	21.422*
	(1.773)	(1.778)	(0.422)	(0.425)			(1.661)	(1.661)
Test for AR(2) errors	-1.007	-1.007	-1.783*	-1.798*	0.002	0.002	n.a	n.a
	[0.313]	[0.313]	[0.074]	[0.072]	[0.998]	[0.998]		
Sargan OIR test	15.972	15.978	16.729	16.758	11.566	11.566	0.011	0.011
	[1.000]	[1.000]	[0.917]	[0.916]	[0.171]	[0.171]	[0.916]	[0.916]
Wald (joint) test	317. 1***	316.93***	177.19***	209.99***	543.63***	543.63***	191.37***	191.37***
	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]
Instruments	60	60	35	35	16	16	9	9
Countries	24	24	24	24	26	26	15	15
Observations	234	234	123	123	79	79	30	30

Panel B: Impact of measures of financial sector importance

	Full data		2 Year NOI		3 Year NOI		5 Year NOI	
Constant	5.793*	7.876***	8.586**	7.180	11.220	5.970	13.397	35.782*
	(1.730)	(3.432)	(1.985)	(1.492)	(1.543)	(0.646)	(0.732)	(1.677)
GINI_1	0.838***	0.838***	0.828***	0.827***	0.857***	0.857***	0.458**	0.458**
	(16.43)	(16.37)	(7.802)	(7.480)	(4.108)	(4.108)	(2.056)	(2.056)
Proposition 5	2.075	---	-1.465	---	-5.250	---	22.384**	---
	(0.946)		(-0.453)		(-0.927)		(2.237)	
Proposition 6	-8.072*	-10.096*	-15.752	-14.010	-26.651**	-21.400**	-77.713	-100.09
	(-1.871)	(-1.948)	(-1.498)	(-1.262)	(-2.348)	(-2.389)	(-0.913)	(-1.172)
Proposition 7	---	-2.059	---	1.433	---	5.250	---	-22.384**
		(-0.941)		(0.445)		(0.927)		(-2.237)
Economic Prosperity	---	---	0.047	0.049	0.117	0.117	-0.404	-0.404
			(0.385)	(0.377)	(0.462)	(0.462)	(-1.224)	(-1.224)
Population Growth	-0.137	-0.149	-0.121	-0.129	-1.042	-1.042	0.422	0.422
	(-0.539)	(-0.533)	(-0.246)	(-0.265)	(-1.031)	(-1.031)	(0.217)	(0.217)
Foreign Aid	---	---	-0.039	-0.039	0.007	0.007	-0.206**	-0.206**
			(-1.439)	(-1.436)	(0.125)	(0.125)	(-2.377)	(-2.377)
Human Development	---	---	0.046	0.050	0.105*	0.105*	-11.483	-11.483
			(1.190)	(1.315)	(1.746)	(1.746)	(-0.567)	(-0.567)
Test for AR(2) errors	-0.941	-0.944	-1.770*	-1.770*	-1.023	-1.023	n.a	n.a
	[0.346]	[0.344]	[0.076]	[0.076]	[0.306]	[0.306]		
Sargan OIR test	20.673	20.705	17.588	17.615	11.125	11.125	0.006	0.006
	[1.000]	[1.000]	[0.890]	[0.889]	[0.194]	[0.194]	[0.936]	[0.936]
Wald(joint) test	327***	326.08***	231.6***	263.59***	4160.2***	4160.2***	87.193***	87.193***
	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]
Instruments	59	59	34	34	16	16	9	9
Countries	27	27	24	24	22	22	15	15
Observations	270	270	123	123	67	67	30	30

*;**;***: significance levels of 10%, 5% and 1% respectively. Z-statistics in parentheses. [ ]:P-values.   NOI: Non Overlapping Intervals. OIR: Overidentifying Restrictions. GINI_1: lagged GINI index. n.a: the second-order autocorrelation test is not applicable owing to constraints in degrees of freedom with the five-year NOI dataset.

Table 4 – Two-step System GMM estimates (Dependent variable: Inequality)

	Panel A: Impact of GDP based Measures							
	Full data		2 Year NOI		3 Year NOI		5 Year NOI	
Constant	7.994	7.993	**14.193****	**14.203****	**16.057****	**16.057****	**36.463****	**36.463****
	(1.379)	(1.376)	**(1.999)**	**(1.998)**	**(1.972)**	**(1.972)**	**(2.528)**	**(2.528)**
GINI_1	**0.802*****	**0.802*****	**0.695*****	**0.695*****	**0.646*****	**0.646*****	0.195	0.195
	(7.406)	**(7.394)**	**(4.648)**	**(4.642)**	**(3.681)**	**(3.681)**	(0.678)	(0.678)
Proposition 1	-0.622	-0.624	2.442	2.440	3.024	3.024	6.735	6.735
	(-0.260)	(-0.260)	(1.248)	(1.247)	(1.401)	(1.401)	(1.170)	(1.170)
Proposition 2	13.178	21.060	-40.564	-14.819	-83.319	-49.388	-14.798	71.453
	(0.306)	(0.490)	(-1.104)	(-0.404)	(-1.135)	(-0.630)	(-0.062)	(0.285)
Proposition 3	-8.168	---	**-25.674****	---	**-33.930****	---	**-86.251*****	---
	(-0.494)		**(-2.044)**		**(-2.021)**		**(-3.287)**	
Proposition 4	---	-8.189	---	**-25.677****	---	**-33.930****	---	**-86.251*****
		(-0.494)		**(-2.043)**		**(-2.021)**		**(-3.287)**
Inflation	-0.002	-0.002	---	---	---	---	-0.092	-0.092
	(-0.089)	(-0.088)					(-0.916)	(-0.916)
Government Expenditure	0.031	0.031	---	---	---	---	---	---
	(0.855)	(0.855)						
Foreign Direct Investment	-0.019	-0.019	-0.014	-0.013	-0.0006	-0.0006	**0.488****	**0.488****
	(-0.329)	(-0.335)	(-0.157)	(-0.155)	(-0.007)	(-0.007)	**(2.015)**	**(2.015)**
Trade	0.013	0.013	---	---	---	---	---	---
	(1.409)	(1.406)						
Test for AR(2) errors	**-0.922**	**-0.922**	**-1.452**	**-1.452**	**0.532**	**0.532**	n.a	n.a
	[0.356]	**[0.356]**	**[0.146]**	**[0.146]**	**[0.594]**	**[0.594]**		
Sargan OIR test	**12.09**	**12.099**	**18.006**	**18.013**	**12.135**	**12.135**	**0.0350**	**0.035**
	[1.000]	**[1.000]**	**[0.875]**	**[0.875]**	**[0.145]**	**[0.145]**	**[0.851]**	**[0.851]**
Wald(joint) test	**360.6*****	**358.5*****	**333.79*****	**332.93*****	**565.64*****	**565.64*****	**394.48*****	**394.48*****
	[0.000]	**[0.000]**	**[0.000]**	**[0.000]**	**[0.000]**	**[0.000]**	**[0.000]**	**[0.000]**
Instruments	58	58	32	32	14	14	8	8
Countries	20	20	25	25	23	23	16	16
Observations	183	183	125	125	71	71	32	32

	Panel B: Impact of measures of financial sector importance							
	Full data		2 Year NOI		3 Year NOI		5 Year NOI	
Constant	6.549	**7.323*****	4.267	9.036	2.377	**12.632****	1.374	**27.520*****
	(1.584)	**(3.608)**	(1.166)	(1.593)	(1.378)	**(2.551)**	(0.287)	**(3.545)**
GINI_1	**0.822*****	**0.825*****	**0.789*****	**0.825*****	**0.745*****	**0.745*****	**0.392****	**0.392****
	(14.58)	**(14.85)**	**(6.359)**	**(6.597)**	**(7.610)**	**(7.610)**	**(2.005)**	**(2.005)**
Proposition 5	0.866	---	**6.447***	---	**10.254*****	---	**26.145*****	---
	(0.262)		**(1.907)**		**(2.634)**		**(4.037)**	
Proposition 6	**-24.638***	**-25.327***	**-17.401****	**-23.631*****	**-18.858*****	**-29.113*****	-22.313	-48.459
	(-1.727)	**(-1.711)**	**(-2.177)**	**(-3.858)**	**(-3.062)**	**(-7.358)**	(-0.297)	(-0.653)
Proposition 7	---	-0.966	---	**-5.616****	---	**-10.25*****	---	**-26.145*****
		(-0.290)		**(-2.269)**		**(-2.634)**		**(-4.037)**
Inflation	0.036	0.036	-0.0004	-0.019	---	---	---	---
	(1.258)	(1.227)	(-0.016)	(-0.387)				
Government Expendit	0.039	0.039	---	---	---	---	---	---
	(1.476)	(1.486)						
Foreign Direct Invest.	---	---	-0.070	-0.060	-0.024	-0.024	0.260	0.260
			(-0.381)	(-0.492)	(-0.340)	(-0.340)	(1.332)	(1.332)
Trade	---	---	---	---	0.002	0.002	0.038	0.038
					(0.150)	(0.150)	(1.189)	(1.189)
Test for AR(2) errors	**-0.224**	**-0.223**	**-1.173**	**-1.155**	**-0.029**	**-0.029**	n.a	n.a
	[0.822]	**[0.822]**	**[0.240]**	**[0.247]**	**[0.976]**	**[0.976]**		
Sargan OIR test	**16.440**	**16.720**	**15.300**	**14.196**	**7.557**	**7.557**	**0.018**	**0.018**
	[1.000]	**[1.000]**	**[0.951]**	**[0.970]**	**[0.477]**	**[0.477]**	**[0.891]**	**[0.891]**
Wald(joint) test	**457.13*****	**466.76*****	**460.81*****	**505.84*****	**2386.3*****	**2386.3*****	**141.79*****	**141.79*****
	[0.000]	**[0.000]**	**[0.000]**	**[0.000]**	**[0.000]**	**[0.000]**	**[0.000]**	**[0.000]**
Instruments	55	55	32	32	14	14	7	7
Countries	22	22	25	25	22	22	16	16
Observations	207	207	120	120	67	67	32	32

*;**;***: significance levels of 10%, 5% and 1% respectively. Z-statistics in parentheses. [ ]:P-values. NOI: Non Overlapping Intervals. OIR: Overidentifying Restrictions. GINI_1: lagged GINI index. n.a: the second-order autocorrelation test is not applicable owing to constraints in degrees of freedom with the five-year NOI dataset.

5. Conclusion

Financial development indicators are often applied to countries/regions without taking into account specific financial development realities. Financial depth in the perspective of money supply is not equal to liquid liabilities in every development context. This paper has introduced complementary indicators to the existing Financial Development and Structure Database (FDSD). The work unites two streams of research. It contributes at the same time to the macroeconomic literature on measuring financial development and responds to the growing field of economic development by means of informal financial sector promotion and microfinance. The paper suggests a practicable way to disentangle the effects of the various financial sectors on economic development. Our results suggest that, from an absolute standpoint (GDP base measures), all financial sectors are pro-poor. However, three interesting findings are drawn from measures of sector importance. (1) The expansion of the formal financial sector to the detriment of other financial sectors has a disequalizing income-effect. (2) The expansion of informal and semi-formal financial sectors at the expense of the formal financial sector has an income equalizing effect. (3) The positive income redistributive effect of semi-formal finance in financial sector competition is higher than the corresponding impact of informal finance.

Appendices

Appendix 1 – Summary statistics and presentation of countries

		Mean	S.D	Min	Max	Obser.
	Panel A: Summary Statistics					
Inequality	GINI Coefficient	43.104	6.828	29.760	67.400	356
GDP-based financial development indicators	Proposition 1	0.255	0.204	0.036	0.935	363
	Proposition 2	0.003	0.010	-0.007	0.097	419
	Proposition 3	0.050	0.055	-0.292	0.198	419
	Proposition 4	0.053	0.057	-0.290	0.244	419
Measures of financial sector	Proposition 5	0.749	0.161	0.175	1.456	360
	Proposition 6	0.011	0.036	-0.024	0.224	360
	Proposition 7	0.238	0.161	-0.457	0.824	360
	Proposition 8	0.238	0.161	-0.457	0.824	360
Control Variables	Inflation	7.239	9.496	-100.00	46.561	395
	Government Expenditure	4.304	10.670	-34.882	61.364	298
	Human Development	1.913	8.0128	0.204	47.486	341
	Economic Prosperity	4.273	3.710	-16.740	27.462	420
	Foreign Aid	9.447	8.946	-0.251	54.785	392
	Population growth	2.275	0.741	0.042	4.146	420
	Trade	68.687	29.967	21.574	187.68	401
	Foreign Direct Investment (FDI)	2.777	4.252	-8.629	36.114	346

Panel B: Presentation of Countries

Botswana, Cameroon, Ivory Coast, Egypt, Ethiopia, Gabon, Ghana, Kenya, Lesotho, Madagascar, Malawi, Mauritania, Mauritius, Morocco, Nigeria, Senegal, Sierra Leone, South Africa, Tanzania, Tunisia, Uganda, Zambia, Niger, Mali, Guinea, Burkina Faso, Burundi, Central African Republic.

S.D: Standard Deviation. Min: Minimum. Max: Maximum. Obser: Observations.

Appendix 2– Correlation analysis

| | Financial (Fin) Dependent Variables | | | | | | | | Control Variables | | | | | | | | Dependent Variable |
| | GDP-Based Measures | | | | Sector Importance Measures | | | | Globalisation | | Economic and Social Considerations | | | | | | |
	Prop1	Prop2	Prop3	Prop4	Prop5	Prop6	Prop7	Prop8	FDI	Trade	Infl	GE	IHDI	GDPg	NODA	Popg	GINI
Prop1	1.000																
Prop2	0.076	1.000															
Prop3	0.099	0.104	1.000														
Prop4	0.110	0.278	0.984	1.000													
Prop5	0.598	-0.065	-0.606	-0.597	1.000												
Prop6	-0.038	0.884	-0.030	0.166	-0.111	1.000											
Prop7	-0.590	-0.134	0.613	0.559	-0.974	-0.111	1.000										
Prop8	-0.590	-0.134	0.613	0.559	-0.974	-0.111	1.000	1.000									
FDI	0.040	-0.08	-0.05	-0.06	0.158	-0.09	-0.13	-0.13	1.000								
Trade	0.290	-0.01	-0.06	-0.06	0.339	-0.02	-0.33	-0.33	0.470	1.000							
Infl	-0.098	0.066	-0.142	0.123	0.060	0.194	-0.105	-0.105	-0.302	-0.110	1.000						
GE	-0.02	-0.01	0.00	0.00	0.05	-0.04	-0.05	-0.05	0.07	0.04	-0.17	1.00					
IHDI	0.09	-0.04	-0.11	-0.12	0.18	-0.03	-0.17	-0.17	-0.03	-0.12	0.04	-0.22	1.00				
GDPg	0.041	0.031	-0.06	-0.05	0.071	0.019	-0.07	-0.07	0.095	-0.02	0.021	0.214	-0.05	1.000			
NODA	-0.433	0.006	0.019	0.019	-0.332	0.134	0.301	0.301	-0.015	-0.25	0.178	0.040	-0.095	0.158	1.000		
Popg	-0.61	-0.00	-0.00	-0.00	-0.39	0.10	0.36	0.36	-0.15	-0.42	0.09	0.02	0.01	0.23	0.50	1.000	
GINI	-0.109	-0.066	-0.340	-0.340	0.322	-0.045	-0.311	-0.311	0.094	0.144	0.044	0.090	0.179	-0.148	-0.175	-0.199	1.000

Prop: Proposition. Infl: Inflation. GE: Government Expenditure. IHDI: Inequality Adjusted Human Development Index. GDPg: GDP growth rate. NODA: Net Official Development Assistance. Popg: Population growth rate. GINI: Inequality coefficient.

Appendix 3 – Variable definitions

Variables	Signs	Variable definitions	Sources
		Inequality Dependent variable	
Inequality	GINI	GINI Coefficient	WDI (World Bank)
		Control Variables	
Inflation	Inflation	Consumer Price Index (Annual %)	WDI (World Bank)
Government Expenditure	GE	Government Final Expenditure (% of GDP)	WDI (World Bank)
Human Development	IHDI	Inequality adjusted Human Development Index	WDI (World Bank)
Economic Prosperity	GDPg	GDP growth rate (annual %)	WDI (World Bank)
Foreign-Aid	NODA	Net Official Development Assistance (% of GDP)	WDI (World Bank)
Population Growth	Popg	Population Growth Rate (annual %)	WDI (World Bank)
Trade Liberalization	Trade	Imports + Exports of Commodities (% of GDP)	WDI (World Bank)
Financial Liberalization	FDI	Foregin Direct Investment (% of GDP)	WDI (World Bank)

WDI: World Bank Development Indicators. GDP: Gross Domestic Product.

Acknowledgements

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MOON PHASE AS THE CAUSE OF MONDAY IRRATIONALITY: CASE OF ASEAN DAY OF THE WEEK ANOMALY

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Abstract

Many Day-of-the week anomaly papers have suggested investor behaviour as the explanation of highly differentiated returns on Mondays; yet, rarely found a paper has empirically investigated it. Therefore, this paper proposes Moon-Induced mood as the determinant of that irrational behaviour. This proposition is based on our preliminary findings that the full moon phase occurred more often on Mondays compared to other days; an indication of a causal relationship. By taking Indonesia, Malaysia, Thailand, and the Philippines as samples during the period of 1999-2010, this paper found: (1) There is evidence of a Monday effect across all the ASEAN stock markets, (2) The moon phase and its interaction with Mondays has significantly influenced the Monday effect, and (3) A full moon on Monday has significant negative influenced on Monday returns. In conclusion, the stimulation by moon phase forms affection bias, and the resulting outcome is the irrational stock market behavior.

Keywords: Moon Effect, Day-Of-Week-Anomaly, Irrational Behavior, ASEAN

1. Introduction

The belief that phases of the moon affect behavior dates back to ancient times. However, the debate about lunar effect on the human body and mind has been a hugely argued anecdotally as well as empirically in literature. For instance is Campbell (1983) who asserts that lunar lunacy research is not scientifically encouraging and explaining human behavior. This is supported by research findings which found there is no relationship between moon phase and behavior (i.e. Guiterrez-Garcia and Tusell, 1997; Chapman and Morrell, 2000; Biermann, 2005; Brahmana et al, 2011).

In another side, several scholars found the evidence of this lunar-lunacy behavior. Their stand point is that similar to the behavior of the ocean, the gravity of the moon creates an

impact on human behavior as 80% of the human body consists of water. The outcome of this moon phase circumstance to humans is the deviant behavior which has already been largely investigated in psychology (*see* Huston and Passerello, 1971; Cuningham, 1979; Katzeff, 1981; Nogueira, 1982; Kelly et al, 1996; Wilkinson, 1997; Barr, 2000; Kanth et al., 2012). The moon phase might also influence an investor's behavior and generate irrationality in his or her stock trading (see Dichev and Janes, 2001; Sivakumar and Satyanarayan, 2009; Gao, 2009).

Interestingly, our pre-investigation found that the full moon occurs more on Mondays (see figure 1). This moon cycle anomaly is consistent with the Day-Of-the Week Anomaly (hereafter DOWA) in finance where it is reciprocated with other psychological studies about moon-caused irrationality. If the DOWA shows the anomaly during Mondays, with the full moon occurring more on Mondays, it is only logical to hypothesize that the full moon affects the behavior.

Figure 1 – The Frequency of Full Moon and New Moon
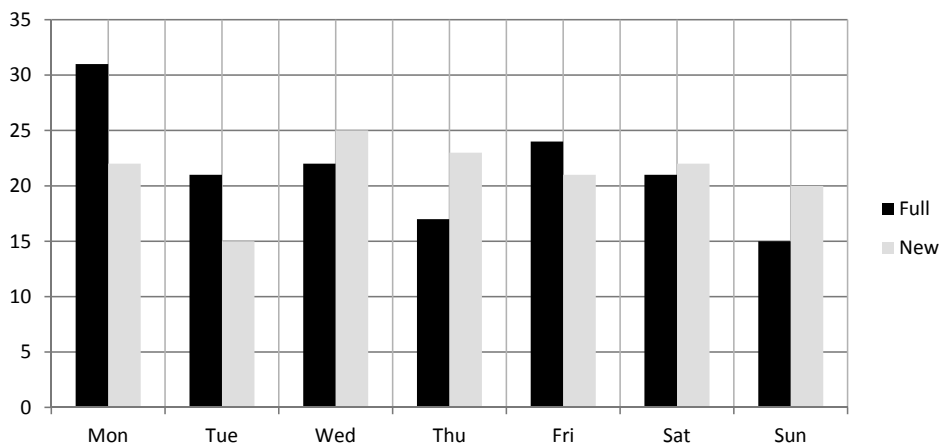
In short, there are four important pieces of information found during our pre-investigation: (1) the literature shows a moon phase might affect investor behavior in the same way that it affects human behaviour, (2) A full moon phase occurs more on Mondays, (3) There is a DOWA in the stock market, showing that Monday returns are significantly different from other trading days, and (4) in finance literature, Monday returns of a DOWA can be explained by using trading behavior perspectives. Compiling this information, this paper hypothesizes that a Moon phase which occurs more on Mondays is the determinant of a DOWA.

This study emphasizes in examining the role of full moon on the day-of the week anomaly (DOWA). DOWA is a market anomaly which has been thoroughly investigated since the first seminal paper: French (1980). It remarked that the stock price returns on a certain day (usually Monday) have been highly and negatively differentiated from other days of the week. Much research has addressed trading behaviour as an explanation of the DOWA (see Abraham and Ikenberry, 1994; Wong et al., 2006); however, empirical investigation is rarely found in this particular research.

This research is in line with DeBondt and Thaler (1995) who suggested that finance theory has to be based on the evidence of the participants' psychology, which in this case is a moon-induced mood. In psychology literature, one of the early studies on the effects of moon

phase on human behaviour was conducted by Huston and Passerello (1971). Their conclusion was that lunar phases, especially during full moon phases, affect human moods and change them to be more depressive or more emotionally disturbed or be changed normally. Cuningham (1979) investigated the role of temperature and the moon on human moods and found that the full moon phases affect the generosity of humans. The effects of the moon phases significantly affect violent behavior (Katzeff, 1981), work accident rates (Nogueira, 1982), strange behavior (Kelly et al, 1996), and anxiety and depression (Wilkinson, 1997). Barr (2000) stated that the moon is a comprehensive source of mood changes. In medical science, the mood of humans is shown by increasing psychotic disorders, violence, and other deviant behaviors during the full moon phase. Furthermore, Barr concluded that the moon cycle has a significant relationship with the quality of life of humans in terms of moods. In summary, those psychology research papers have found that the role of the full moon is significant in inducing deviant behavior, irrationality, depression, or mood disturbances in humans.

Empirical results have also proven that the moon cycles influence decision making in finance. One early study was conducted by Dichev and Janes (2001). They investigated the major US stock index over the previous 100 years and all the major stock indices of 24 other countries over 30 years and found that the moon cycle was aligned with the market returns. However, the research proved that the moon cycle did not affect the return volatility and trading volume. Herbst (2007) also conducted research on the relationship between the moon cycle and market returns. The results of the relationships were various and inconsistent. He demonstrated how the moon cycle inconsistently explained either daily returns or the price volatility of the Dow Jones index. Sivakumar and Satyanarayan (2009) investigated the relationship between the moon cycle and the Bombay Stock Exchange returns over 17 years and concluded that the moon cycle was linked with returns. Gao (2009) also investigated the relationship between the moon cycle and market returns in two major Chinese stock markets over 16 years and concluded that lunar phases affected stock returns. Further, Gao (2009) also showed that the returns were relatively lower in the new moon phase and relatively higher in the full moon phase. Additionally, Liu (2009) conducted research on 12 countries using the GARCH model and the Bayesian approach. His/Her results indicated that the existence of the lunar phase affects daily stock returns, in particular that the impacts of the lunar phases were varied across the nation. Liu showed that there is a higher volatility of stock returns during full moon periods. Based on these empirical results and theories, it can be concluded that the moon cycle affects moods of the decision making of market participants.

The role of the moon on investor behavior can be explained by using three major theories, namely, Ellis' ABC model, the Somatic market theory and Forgas' (1995) affection infusion model (AIM). Ellis' ABC model addressed these stimulating events as the activation of irrational behavior in humans. In this matter, the moon phase gravity was the stimuli and it activated irrationality of investors in decision making. Meanwhile, the somatic marker theory explains that strong threats from the environment create bodily reactions that reinforce sustained panic (Tvede, 2002). Relating to this research, full moon gravity affects investors, and reinforces sustained panic in a form of irrational decision making. Lastly, Forgas's (1995) AIM described how the affection from external environments (in our research it is the full moon affection) was infused into the information processing and created biased decision making. Elaborating on those theories, the flow of the full moon affects investors is that investors are stimulated by the full moon's gravity on Mondays. Having this stimulus, investor experiences affection bias and shows moon-induced mood behavior, and as a result, it generates the DOWA. Depicted in Figure 2, the hypothesis is reasonable and logical. This is aligned with our objective which is to investigate whether the moon phase, proxy of

moods, can explain the the Day-of-The-Week Anomaly (DOWA). Based on the literature review, our proposition is "**Moon Mood is the determinant of the Day of Week Anomaly**".

This study addresses an intriguing but interesting question: is there any relationship between the moon and the Day-Of-Weekend Anomaly? It defers to other studies in three ways, first, it investigates the relationship between the moon phase and the DOWA. Second, the moon phase dummy in this research was only taken if it was a peak phase. Lastly, the psychology theory was introduced as the underlying cause as a way of explaining the relationship. The rest of paper is organized as follows. The research method is addressed in section 2; data is addressed in section 3; the findings and results are discussed in section 4; the conclusion is detailed in section 5.

Figure 2 – Theoretical Framework
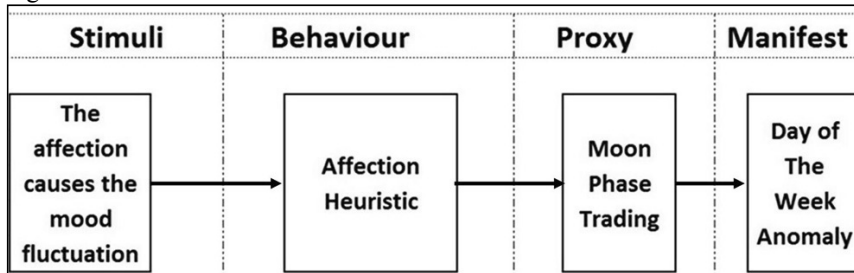
2. Research Design

2.1 Procedures

Several phases were conducted in this paper to check the relationship between moods (moon phase as the proxy) and DOWA. First, the existence of the Monday effect of the DOWA was investigated (see equation 1). After the DOWA was found, the relationship between market returns and moon phases was examined. In this phase, the mean difference and t-statistic was used to check the level of influence. Then, a modified French's (1980) regression model was utilized with one lag to investigate the relationship between the DOWA and the moon phase (see equation 2). For a robustness check, the effect of the Monday's moon on Monday's return was revisited (see equation 3). The model is described below.

2.2 Day-of-Weekend Anomaly Model

The Day-Of-Weekend Anomaly is run by replicating the seminal model of French (1980):

$$R_t = \alpha_t + \gamma_1 dTue_t + \gamma_2 dWed_t + \gamma_3 dThu_t + \gamma_4 dFri_t + R_{t-1} + \varepsilon_t \qquad (1)$$

Where: R_t is Return of the stock at t-time. $dTue_t$, $dWed_t$, $dThu_t$, and $dFri_t$ are Tuesday dummy, Wednesday dummy, Thursday dummy, and Friday dummy, respectively. To eliminate the variance error, a one-day lagged was introduced.

2.3 Moon Phase and Day-of-Weekend Anomaly Model

This research employs equation 2 by introducing the dummy variable interaction to test the relationship between moon phases on DOWA. In this model, there are two dummy variables (

dME_t, $dMOON_t$), one dummy interaction, and one-lagged return as the variance error elimination (R_{t-1}). The model is:

$$R_t = \alpha_1 + \alpha_2 dME_t + \alpha_3 dMOON_t + \alpha_4 (dME_t{}^* dMOON_t) + \alpha_4 R_{t-1} + \varepsilon_t \qquad (2)$$

Where dME_t is Monday Effect dummy as the proxy of DOWA. 1 if it is Monday, and 0 if otherwise. $dMOON_t$ is the moon phase dummy. 1 if it is full moon peak, and 0 if otherwise. R_{t-1} is the one-lagged return or the return of the period t-1.

2.4 Moon on Monday and Monday Returns Model
This research investigates in detail the association between the moon on Monday and the Monday return as the robustness. Closing prices and opening prices were used to calculate the Monday returns. The Friday return was introduced as the one-lagged return in the model to eliminate the variance error.

$$Log\left(\frac{Monday_{close}}{Monday_{Open}}\right) = \alpha_1 + \alpha_2 dMOON_t + \alpha_3 Log\left(Friday_{close}\Big/ Friday_{open}\right)_t + \varepsilon_t \qquad (3)$$

Where $Monday_{close}$ is the Monday closing price. $Monday_{Open}$ is the Monday opening price. $Friday_{close}$ is the Friday closing price. $Friday_{open}$ is the Friday opening price. $dMOON_t$ is the moon phase dummy where 1 if it is full moon, and 0 if otherwise.

3. Data
This research used 4 stock markets; Indonesia, Malaysia, Philippines, and Thailand, as samples. The period was from January 1999 until December 2010 as a daily basis of market returns. The market returns data was retrieved from Thomson Datastream. Meanwhile, the moon phase calendar is retrieved from www.moonconnection.com[1]. For the sample to be reliable, the moon had to first be checked cyclically[2]. (Dichev and Janes, 2003).

4. Results
4.1 Descriptive Results
Based on table 1, from the descriptive results two main issues arise. First, in terms of returns, the mean of the daily returns in the ASEAN-4 markets is relatively small. In terms of volatility, the ASEAN-4 markets have a relatively high dispersion of returns. This indicates that the probability of losing is higher than the probability of returns. This description depicts the distribution of normal returns.

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[1] Most of seminal papers of Moon Research use this website or www.lunarphases.com.
[2] The result does not appear in this research. We can give it by request.

Table 1 – Descriptive Results of the Market Returns Each Countries

	INDONESIA	MALAYSIA	PHILIPPINES	THAILAND
Mean	0.0529	0.0247	0.0099	0.0267
Maximum	7.9212	6.0250	17.5597	11.1567
Minimum	-10.3754	-9.4968	-12.2683	-14.8395
Std. Dev.	1.5554	1.0539	1.4469	1.5814

Note: Numbers stated in the table is the returns of market in percentage

4.2 Evidence of the Day-of-Weekend Anomaly in ASEAN

Common sample group statistics in equation 1 were used on the ASEAN-4 stock market to investigate whether the returns were generated in calendar time. The calendar-time hypothesis surmises that the expected market returns are the same for each day. Furthermore, this hypothesis surmises that if a certain day has a high return, the following day should also have the same rate of return. Thus, our results reject this calendar time hypothesis and are able to claim the existence of a DOWA.

Panel A depicts the difference between the returns for Monday and the returns for other days of the week in the ASEAN-4 markets. It describes the returns of Mondays and shows that they were mostly in the negative region, while the returns of the other days were null or positive over all markets. It also demonstrates that the market returns were not constant throughout the week nor had the same relative level of return. In addition, to have high negative returns for Mondays indicates the Monday Effect of a DOWA.

PANEL A – Descriptive of Daily Returns Each Countries

INDONESIA	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY
Mean	-0.2243	0.0834	0.0318	0.1177	0.2366
Maximum	5.9673	5.5013	7.9212	7.2258	7.1630
Minimum	-10.3571	-7.6977	-10.3754	-5.9361	-6.9055
Std. Dev.	1.7320	1.3788	1.5651	1.4090	1.4460

MALAYSIA	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY
Mean	-0.1438	0.0936	0.0487	0.0571	0.0676
Maximum	4.1893	4.1224	4.6056	5.8765	6.0250
Minimum	-9.4968	-3.8421	-6.1453	-3.7681	-4.8907
Std. Dev.	1.2435	0.9267	1.0374	0.9580	1.0220

PHILIPPINES	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY
Mean	-0.0457	-0.0059	0.0095	0.0954	0.0609
Maximum	17.5597	9.8178	4.4725	4.1948	4.6940
Minimum	-12.2683	-5.5163	-7.9201	-6.0067	-8.3306
Std. Dev.	1.8430	1.3029	1.3293	1.2662	1.2588

THAILAND	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY
Mean	-0.2626	0.0162	0.0266	0.0245	0.2882
Maximum	5.3921	10.1012	11.1567	10.7700	8.5950
Minimum	-10.4974	-14.8395	-6.8790	-6.7197	-9.6062
Std. Dev.	1.5267	1.5678	1.6801	1.4536	1.5182

Note: Numbers stated in the table is the returns of market in percentage

Panel A shows three important findings. First, mean returns on Mondays show a highly negative difference in the ASEAN-4 markets. Meanwhile, other days have stable positive

mean returns which indicate the DOWA, specifically, the Monday Effect. Second, the spread of the maximum and minimum on Mondays is relatively higher than other days, which means that irrational behavior occurs implicitly on Mondays. This spread also indicates the existence of the DOWA. Lastly, the volatility of Monday returns are relatively higher compared to other days indicating the DOWA anomaly existence on the ASEAN-4 markets.

Table 2 confirms the evidence of the DOWA. It documents that all ASEAN-4 stock markets experienced the calendar anomaly between 1999 and 2010, which is in line with the prior research of Jaffe & Westerfield (1985), Lakonishok & Maberly (1990), Agrawal & Tandon (1993), Kok & Wong (2004), Wong et al., (2006), and Chandra (2006). The mean of Monday returns was negative and significantly associated with the market returns. Additionally, the negative coefficient on Monday increased to positive returns and diminished again when it closed on Friday. The coefficient of the model was found to be significant at a 1% level. As seen in Table 2, the evidence of DOWA shows that we can continue to the next level of our research.

4.3 The Full Moon and New Moon Differences

Now we can proceed to the differences between full moon and new moon returns. It is important to examine the significant differences between these two phases. If the full moon effect on the returns is the same as the effect of the new moon phase, it indicates that the moon phase has no effect on returns. Furthermore, it implies that the cyclical movement of the moon is ordinary without any impact. To investigate this in detail, the mean difference, standard deviation, and, t-test must be checked.

Table 2 – The French's (1980) DOWA Model Result

		Indonesia	Malaysia	Thailand	Philippines
intercept/Mon	Coefficient	-0.0023***	-0.0014***	-0.0026***	-0.0005***
	Std. Error	0.0007	0.0005	0.0007	0.0007
Tuesday	Coefficient	0.0034***	0.0022***	0.0030***	0.0002***
	Std. Error	0.0010	0.0007	0.0010	0.0009
Wednesday	Coefficient	0.0027***	0.0018***	0.0027***	0.0011***
	Std. Error	0.0009	0.0006	0.0009	0.0009
Thursday	Coefficient	0.0036***	0.0022***	0.0035***	0.0004***
	Std. Error	0.0012	0.0008	0.0012	0.0011
Friday	Coefficient	0.0045***	0.0020***	0.0055***	0.0010***
	Std. Error	0.0010	0.0007	0.0010	0.0009
T-1	Coefficient	0.1584***	0.0941***	0.0549***	0.1095***
	Std. Error	0.0200	0.0202	0.0203	0.0202
R-Squared		0.0332	0.0621	0.0334	0.0535
F-Value		16.6773***	3.7910***	7.0824***	6.6574***

Note: *** is significant in 1% level.; T-1 is lagged one return

In terms of the mean difference, table 3 shows that the full moon mean returns are different compared to new moon mean returns, which are twice as high as or more than full moon mean returns, while confirms the psychology literature, the full moon phase promotes aggressive behavior. A hypothetical explanation is that there are negative returns during the full moon day. Likewise, the standard deviation of the new moon is also lower than the full

moon. The t-test indicates that aggressiveness during the full moon phase is higher compared to in the new moon phase. The t-test difference was conducted to evaluate it further in a statistical manner.

Table 3 - The Returns of Full Moon and New Moon in ASEAN-4 Stock Markets

		Indonesia	Malaysia	Philippines	Thailand
Mean Daily Return	New Moon	0.0835	0.0509	0.0136	0.0337
	Full Moon	0.0227	0.0013	0.0062	0.0196
Standard Deviation	New Moon	1.4643	1.0512	1.4436	1.5721
	Full Moon	1.6143	1.0564	1.4518	1.5915

Note: Numbers stated in the table is the returns of market in percentage

By conducting the paired t-test, our results show an interesting effect. Based on table 4, the full moon phase had a different effect on market returns compared to the new moon phase, which implies that there are distinguished returns between a full moon and a new moon phase in Indonesia, Malaysia, the Philippines, and Thailand. This could also imply that the ASEAN-4 stock market investors are irrational by following their moon phase affection; a confirmation of the mean difference result.

Table 4 – T-Statistic Results

Indonesia	Standard Errors	-4.83
	T-Stats	-2.43**
Malaysia	Standard Errors	-5.97
	T-Stats	-2.44**
Philippines	Standard Errors	-12.07
	T-Stats	-3.14***
Thailand	Standard Errors	-8.6
	T-Stats	-2.91***

Note: **, *** denote the significant at the 5%, and 1% respectively

4.4 The Role of the Moon Phase on the Day-of-the Week Anomaly

The next procedure is to investigate the relationship between moon phases and market returns by introducing the dummy interaction of the Monday effect and the Monday moon. The interaction between the Monday dummy effect and the moon phase dummy indicates the role of the Monday's moon phase effect. It is noteworthy that this model was constructed under the dummy interaction model. Hence, the Moon dummy variable was been found to be significantly influenced by the returns. If the moon significantly affects the returns, it will lead to a second question; on which day does the moon have the most influence? To prove this hypothesis, equation model 2 was employed to see if there was a relationship between moon and market returns.

This research is designed so that the entire distribution of the new moon returns and full moon returns plot into a frequency distribution table (see Figure 3). The distribution of the returns is depicted as new moon and full moon in the pooled data of the ASEAN-4 markets. Over 44 country-years on a daily basis were observed. In total, the observation was 4892 days for the full moon period and 4836 days for the new moon period.

The ASEAN-4 stock markets were grouped into 2% return intervals to provide a density of the frequency distribution of the returns. Interestingly, the results are different from the previous research of Dichev and Janes (2003) where the new moon returns and full moon

returns were relatively different in peak shape (kurtosis) and in their increase / decrease rate shapes. In terms of dispersion, the skewness is similar to the results of Dichev and Janes (2003), in which the shift looks regular and clean throughout the entire right side and left tail end for a normal distribution. The shape difference between the new moon and full moon confirms that certain moon phases have different impacts on returns behavior. It also implicitly shows that moon phases influence the market; an indication of the effect of the moon on market behavior. To check the relationship robustly, this study investigated the relationship by employing equation 3.

The role of the full moon on Monday encourages the irrational behavior of investor, and this irrationality generates the DOWA as the outcome. The interaction of the Monday Effect variable and the Full Moon variable is used to prove there is a relationship. Panel B shows the significant relationship between this interacting variable on market returns implying that a relationship exists between the full moon and the DOWA. This relationship is in line with the previous results of Annuar and Shamser (1987), Ho (1990), Wong, Hui and Chan (1992), Aggarwal and Rivoli (1994), Agrawal and Tandon (1996), Foo and Kok (2000), and Basher and Sadorsky (2006).

Figure 3 – Frequency distribution of the returns of moon phases
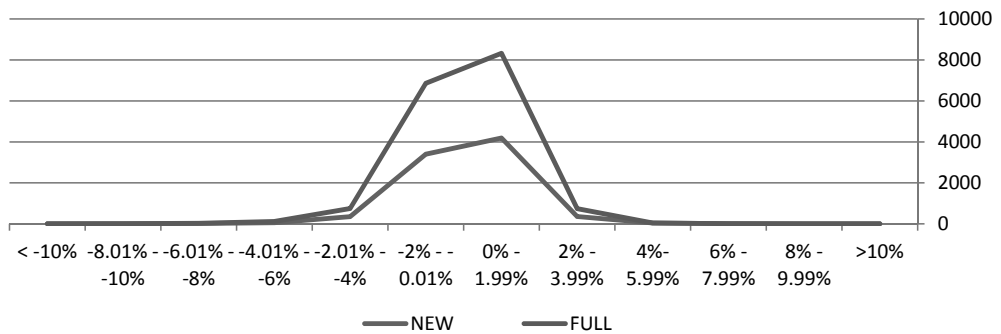
Panel B consists of four tables. Each table shows the regression result of equation 2 from each country of ASEAN-4. It addresses the coefficient, probability, and R-Square. The ME stands for the Monday effect, the Moon represents the Full Moon dummy; M*Moon represents the dummy interaction; and RMIN1 is the one lag return.

A different relational conclusion for each independent variable can be observed in Panel B. In terms of the Monday Dummy, a significant relationship is shown in the market returns of each ASEAN-4 countries. The relationships were negatively significant at a 5% level, and confirmed the previous results about the Monday effect on the ASEAN-4 stock markets. Meanwhile, the relationships between the full moon phase and market returns also shows a negatively significant association. It was negatively significant at a 5% level in the stock markets of Indonesian, Malaysian, and the Philippines with a coefficient of -0.10, -0.02, and -0.06 respectively. In addition, the relation between the full moon and Thailand stock market returns was significant at a 10% level with coefficient value of -0.03. This relationship highlights the role of the full moon on market returns.

By introducing the dummy interaction, it was found that the full moon on Mondays had an effect on the market. Thailand and the Philippines had a negatively significant relationship at a 5% level, while it was negatively significant at a 10% level for the stock markets of Indonesia and Malaysia. This is in line with our hypothesis and plots, whereas, the full moon

phase occurs more on Mondays. Those occurrences of full moon on Mondays affect the investors decision making through their mood; as an outcome, the DOWA occurs in those ASEAN-4 stock markets.

Table 1 of Panel B describes the results of the Indonesian stock market. First, the Monday effect is significantly associated with market returns, signaling the DOWA. The relationship was at a 5% significance level with a coefficient value of -0.06. The negative sign strengthens the DOWA indication as it is identical to with the French (1980) DOWA model. The Moon phase dummy was also found to significantly influence the market returns at a 5% level with a coefficient value of -0.10. This indicates that the full moon has a role in manipulating market returns. If the full moon occurs the Indonesian stock market returns might fall to 0.1%. The interaction variable of the Monday effect and moon phase implies that the Moon phase and Monday Effect plays a role in the Indonesian stock markets, where it was negatively significant at 10% with a coefficient value of -0.28. Therefore, it can be concluded that the numbers of full moon occurs on Mondays is the determinants of DOWA.

The Malaysian stock market result is shown in Table 2 of Panel B. Similar to the Indonesian stock market results, there is an indication of the role of the Moon phase on the DOWA. The Monday variable effect shows a significant level at 1%; whereas, the moon phase had a significant level at 5%. The values were also similar to the Indonesian result where it was -0.09 and -0.02 for the Monday effect and the full moon dummy, respectively. The dummy interaction shows a significant relationship to market returns at a 10% level which implies that it might be the full moon on Monday which causes the Monday irrationality (DOWA) in the Malaysian stock market.

Table 3 of Panel B addresses the result of the Thai stock market. It shows a negatively significant relationship between the Monday effect and the market returns at a 1% level where the coefficient was -0.14. Meanwhile, the full moon dummy variable was significant at 10% level, and the coefficient value was -0.03, confirms the evidence of the DOWA and supports our hypothesis about the full moon being the driver of the DOWA. The dummy interaction was significant at a 5% level with coefficient of -0.11. In other words, the full moon on Monday in Thailand affected the investors' decision making on Monday.

In the last table of Panel B, the result of the Philippines stock market was addressed. Again, the result comes to the same conclusion as the other tables in Panel B. A negatively significant relationship was found from the entire list of regressors (Monday Effect, Moon Phase, and Dummy interaction) on the market returns of the Philippines at a 5% level, which means Monday's full moon had an effect on the DOWA in the Philippine market. If the full moon occurs on a Monday, the Philippines stock market might have DOWA with a 0.04% drop in of market returns.

In terms of the R-Square value, the Indonesian stock market had the largest R-Square. At the same time, the Philippine market has the smallest value. The Indonesian R-Square was 3.64%, and the Philippines value was 1.86%. In addition, Malaysia had a 3.31% value and Thailand had a 2.87% value. This indicates that the regressor can be used to explain the model. Note that the small number of R-Square values in our model is a common fad as our model was constructed under a dummy variable interactive model. In summary, the moon phase has played a role in the Monday effect of the ASEAN-4 DOWA between 1999 and 2010. The interaction between the Monday Moon and Monday Effect has had a negative association to market returns.

PANEL B – The results of Moon Phases and Market Returns

	Variable	Coefficient	Prob.		Variable	Coefficient	Prob.
INDONESIA	C	0.08	0.0621	MALAYSIA	C	0.012	0.0421
	ME	-0.06	0.0349		ME	-0.09	0.0088
	MOON	-0.10	0.0440		MOON	-0.02	0.0312
	M*MOON	-0.28	0.0745		M*MOON	-0.05	0.0644
	RMIN1	0.1557	0.0000		RMIN1	0.1555	0.000
	R-Squared	0.0364			R-Squared	0.0331	
THAILAND	C	0.013	0.0023	PHILIPPINES	C	0.013	0.0445
	ME	-0.14	0.0047		ME	-0.05	0.0387
	MOON	-0.03	0.0687		MOON	-0.06	0.0349
	M*MOON	-0.11	0.0125		M*MOON	-0.04	0.0482
	RMIN1	0.0511	0.0119		RMIN1	0.1125	0.0000
	R-Squared	0.0287			R-Squared	0.0186	

Note: C is the intercept; ME is the Monday Dummy; MOON is the Moon Dummy; RMIN1 is the Lagged-one returns.

4.6 Monday Moon and Monday Returns

As a robustness check, the role of Monday's full moon on the DOWA was investigated further by using Equation model 3. The returns were based on the daily return, by taking the opening and closing price.[3] The random walk model was adopted as the control variable for the estimation[4].

Table 5 addresses the results of equation 3 which consists of the regression coefficient values, probability value, R-Squared value, F test Value, and the probability result of the F test. In terms of R-Squared, the value lies between 1.2% and, inclusive of 2.5% where the Indonesian stock market returns are explained by the Moon, while the Philippines returns are at a lower value. This range is considered normal for an event study with a dummy variable model. The F-Value of the model in each market shows a high value where we can surmise the model cannot be rejected. In conclusion, it may be stated that the model can be used to explain the relationship between the full moon phase and market returns.

Table 5 documents that the Indonesian, Malaysian, and the Philippines stock markets were negatively and significantly influenced by the Moon Phase at a 5% level. Meanwhile, the significant level of the relationship between the Thailand stock market and the moon phase was only 10%. The full moon on Monday was a negatively significant influence on Indonesian stock market returns on Mondays where the coefficient value was -0.0282. Meanwhile, the coefficient values were -0.0024, -0.00108, and -0.00136 for the relationship between Monday full moon and Monday stock returns of the Malaysian, the Thai, and the Philippine stock market, respectively. The negative sign shows that the Monday full moon might cause a bearish Monday (DOWA) in every ASEAN-4 stock markets. Furthermore, Friday's returns in each market showed a significant relationship to Monday's returns at a 1% level.

It can be concluded that the Monday full moon has a negative impact on Monday returns. The affection bias, which was generated by the full moon, influences investment decisions. It was deemed that gravity during the full moon caused irrationality in an investor's

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[3] If the standard calculation is used, which is the normal logarithm of that day's closing price which is then divided by previous closing price, it will be weekly returns. We do this to avoid any biased results.

[4] We adopted the random walk model by adding one-lagged returns, which is in this case is Friday returns.

Monday trading behavior; which is in line with the Forgas (1985) affection infusion model, and also with our previously demonstrated results. Hence, the full moon occurring on Monday is a determinant of DOWA.

Table 5 – The results of Monday Moon and Monday Returns

Items	INDONESIA	MALAYSIA	THAILAND	PHILIPPINES
C	0.0307**	0.0168**	-0.000176*	0.00765*
MOON	-0.0282**	-0.0024**	-0.00108*	-0.00136**
FRIDAY	0.156625***	0.1530***	0.047878***	0.112058***
R-Squared	0.0251	0.0243	0.002369	0.012678
F-Value	30.9025	29.9407	2.854432	15.43509
Prob(F-statistic)	0.0000	0.0000	0.057784	0.0000

Note: *, **, *** is significant in 10%, 5%, and 1% level
C is the equation intercept; Moon is the Moon Dummy; FRIDAY is the Friday returns. The figures stated are the coefficient value.

5. Conclusion
The moon is believed to be one of the factors of moods. In the abnormal psychology field, the affective influences of the moon-mood can affect cognitive decision making. As proven by previous empirical results, the affect of the moon on moods can also affect economic behavior. This study aims to investigate the role of the moon on irrational behavior of calendar anomalies. By using Ellis' ABC model plus the Somatic Marker and Forgas' Affection Infusion Model, this research able to explain the day-of-the week anomaly (DOWA) in a psychological manner.

Our findings are divided into 3 sections: (1) the existence of the DOWA, (2) the relationship between the moon and market returns, and (3) the relationship between the moon and the DOWA. First, it can be stated that the DOWA initially existed in the ASEAN-4 stock markets. The high negative returns on Mondays were different to returns on other days, and the regression results confirmed this conclusion. Further, based on these results, we surmised that the type of DOWA, which occurred in the entire stock market, was the Monday Effect.

Second, the possibility of an explanation of the moon on market returns was mentioned. Figures 1 depicts that there are some links between the phase of the moon and the behavior of market returns. These links were then investigated further. The results showed that there was a negatively significant relationship between the interaction of the moon phase, Monday effect, and the DOWA. These results can also be used as an explanation of the DOWA from a behavioral perspective.

For a more robust investigation we ran the equation model of the relationship between Monday full moon and Monday returns (equation 3). We detained the "real" Monday returns by using the opening and closing price as the measurement for these returns. The purpose was to grasp the power of moon phase on Monday's behavior. Further, we utilized the random walk by introducing the one-lagged day returns to control the model, which, in this case, was Friday. Fascinatingly, we found that the Monday moon was connected to the Monday returns, thus confirming our first results. This means that the moon phases significantly influences the DOWA.

In summary, our findings are as follows. First, full moon occurred more often on Mondays from 1999 to 2010. This occurrence generated the deviant behavior caused by the affection bias, which became the activating event for an investor to be more irrational on Mondays compared to others days. In other words, the Moon Phase is the stimulant of investor trading behaviors. Second, the moods induced by moon phases caused a biased decision making;

which in economics called "irrational behavior". This irrational behaviour was portrayed by the Day-of-the week anomaly. Our regression model and the T-Test delivered the evidences of it implying that the moon phase plays a role on trading behavior. In more simple words, the affection bias (caused by the moon phase) produces the day-of-the week anomaly.

The findings can be discussed using the above three mentioned theories (Ellis' ABC, Somatic Marker, and Forgas' AIM). Using Ellis' ABC model, the relationships were analyzed as follows:

Activating Event (A): Full Moon on Monday
Beliefs and Cognition Process (B): Mood disturbance
- Investor A: "I feel tired with my stock performance. Just sell it"

    or

- Investor A: "I feel it is the time to sell"

Inferences about the event: Hedonic Utility

Consequences (C): Overweighted on the selling side causing Day of the Week Anomaly (DOWA)

Feelings: depressed, aggressive, hedonic, moody
Behaviors: Investor made pressure on the market and caused Monday Irrationality (Day of the week anomaly).

The relationship between the moon phase and DOWA can also be explained as a Somatic Marker. In this hypothesis, if there is a strong threat from an external factor (in our case full moon gravity), it can create a human reaction that reinforced panic or heuristic bias. The full moon occurrences anomaly (more full moon on Monday than other days) forces the human body to be more heuristically biased in decision making. Hence, DOWA occurs as a consequences of it.

Lastly, using Forgas' Affect Infusion Model (AIM), our result can be explained as follow. The first process in AIM is "Direct Access" where the full moon hit the investor frequently on Monday. The second stage is the "Motivational Process". This occurs when the affect of the full moon gives a biological issue in the human body through its gravity. The influence of a full moon on human biology leads to irrationality. The third stage is "Heuristic Infusion" where the irrationality drives the investor to make biased decision. The last stage of AIM is "Substantive Procession", which is the infusion process of affection bias causing biased decision making which is portrayed in DOWA.

In summary, it can be claimed that the moon phase and the affection bias are the drivers of the day-of-the week anomaly in the ASEAN-4 stock markets. Future research might look at other psychological biases such as cognitive dissonance or from the point of view of market microstructure.

2. Before employing the whole equation, the cyclical process of moon phases has to be checked. It is very important to put the dummy moon phase in the equation. We employed equation 4 that used continuous lunar impact sinusoidal model to test for the cyclical pattern. According to this model, the lunar effect reaches a peak at the time of the full moon and bottoms out at the time of the new moon, following a cosine curve with a period of 29.53 days (the mean length of a lunar cycle). The edge of the new moon is the first quarter, and the edge of the full moon is the last quarter. Dichev and Janes (2003) model was replicated for equation 4, which can be written as:

$$R_t = \alpha + \beta^* Cos\left(\frac{2\pi d_t}{29.53}\right) + \varepsilon_t \qquad (4)$$

Where *Rt* is the daily return during a full moon or a new moon period in period "t". *d* is the number of days since the last full moon day, and the β coefficient indicates the relationship between stock returns and lunar cycles.

NOTE
1. The moon phase cannot be observed during the day because sunlight beams make it hidden from the naked eye.

Phase	Visibility	Standard time of culmination (mid-phase)
New moon	after sunset	12 Noon
Waxing crescent moon	afternoon and post-dusk	3 PM
First quarter moon	afternoon and early night	6 PM
Waxing gibbous moon	late afternoon and most of night	9 PM
Full moon	sunset to sunrise (all night)	12 midnight
Waning gibbous moon	most of night and early morning	3 AM
Third (last) quarter moon	late night and morning	6 AM
Waning crescent moon	pre-dawn and morning	9 AM
Dark moon	before sunrise	12 noon

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RETAILER – CONSUMER RELATIONSHIPS FOR DURABLE GOODS MARKET IN ROMANIA. A MULTIMETHOD ANALYSIS

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Abstract

The durable goods market in Romania has many features thanks to simultaneously: acquisition way, structure of households, retailers on this market, banking policies as regards providing consumption loans („loans with identity card only"), macroeconomic policies of tacit supporting in relation to banking policies etc. These characteristics are found in the low endowment with durable goods of households in Romania, and that generate features of the acquisition process, the decision taking process of durable goods and implicitly of retailer – consumer relationships. This paper covers the last aspect, being used a representative urban sample of 300 households, the following methods being used for data processing: χ^2 test bivariate, ANOVA, Wilcoxon test, Cronbach alpha, split – half, the goal of this paper being that to provide new results referring to retailer – consumer relationships for the durable goods market in Romania, that confirm or infirm the foreign research results..

Keywords: Durable goods; Romanian market; Socio-demographic variables; Households; Statistical methods; Retailers; Consumers.

1. Introduction

In the author's previous research have been published results related to the durable goods market in Romania (using numerous statistical methods), concerning this market, this paper being a completion with new results about this topic. Following the previous research, it has resulted that the durable goods market in Romania has many *features* thanks to simultaneously:

- To purchase durable goods, consumers in Romania use the following criteria and information sources (Gabor et al., 2009): *price, promotions, brand of the product*, the smallest influence having the provided *after sales service;*
- Acquisition way used by Romanian consumers (period, location, promotional influences etc.) according to Gabor (2011a; 2012a, 2012b, 2013);
- Significant differences statistically as regards endowment with durable goods across counties, development regions and nationally (Gabor et al., 2011);
- Information sources used by Romanian consumers in purchasing durable goods vary according to their age (Gabor et al. , 2011b) *;*

- Socio-demographic characteristics that best discriminate this preference for foreign brands being the income and studies of the household head (Gabor et. al, 2011) *;*
- Households in Romania, from urbane environment, are still endowed with black and white TV (14.3%) and non-automatic washing machines (27%) or very old or second hand goods (25%) (Gabor , 2013) *;*
- Romanian consumers are not sensitive to variables related to *brand* of durable goods, *name of shop* or *design of product* but are strongly influenced by their price (Gabor , 2012a) *;*
- Structure of households and families that represent these households respectively, and implicitly characteristics of the head of their households (Gabor , 2012a);
- Buying power is very low in Romania (*Our income is enough for a decent living, but we cannot afford buying some more expensive goods)* (Gabor , 2013)*;*
- 42% of urban households have loans or credits (Gabor , 2013). To these aspects are added those related to economy and standard of living related to households in Romania, respectively*;*
- Banking policies in Romania as regards providing consumption loans ("loans with identity card only") in order to rise the accession extent of these types of loans with direct implications on the increase of buying durable goods and therefore, standard of living and quality of life concerning households in Romania, ranked at the bottom of the list of EU member countries concerning this indicator;
- Macroeconomic policies of tacit supporting in relation to the banking policies described above;
- Compared to the other EU Member Countries [1] (according to statistical data supplied by Eurostat), *Romania occupies the first place within classification concerning the lack of some durable goods* (washing machine, landline and mobile telephone, color TV, personal computer , car*) due to the lack of financial resources*.

Starting from the above mentioned, the conceptual frame of this paper is summarized in figure 1.

This paper has research as *aim*, by means of statistical methods, the relation between Romanian consumers of durable goods and retailers that operate on this market. The objectives of this paper, embodied in the research hypotheses are summarized in Table 1 in the following paragraph. We mention that these results are a completion and are based on the author's previous research being the first in the specialty literature that provide results – achieved by applying the multimethod analysis – about this market.

In order to achieve the objectives of empirical research it has been used a representative sample made of 300 households in Tirgu Mures municipality, selected through a double sampling scheme to provide the sample representativeness. It has been used a questionnaire managed by a sampling operator, data being gathered in May 2011. For data processing the following statistical methods have been used: χ^2 test bivariate, ANOVA, Wilcoxon test, Cronbach alpha, split – half, multiple feedback data processing.

We shall present further a brief description of the main research carried-out in order to characterize the durable goods market, mentioning that international literature has no many research papers in this respect. Then we present – separately for each statistical method used – the main results of this research, section followed by future research directions and conclusions.

Figure 1 – Conceptual framework of the paper
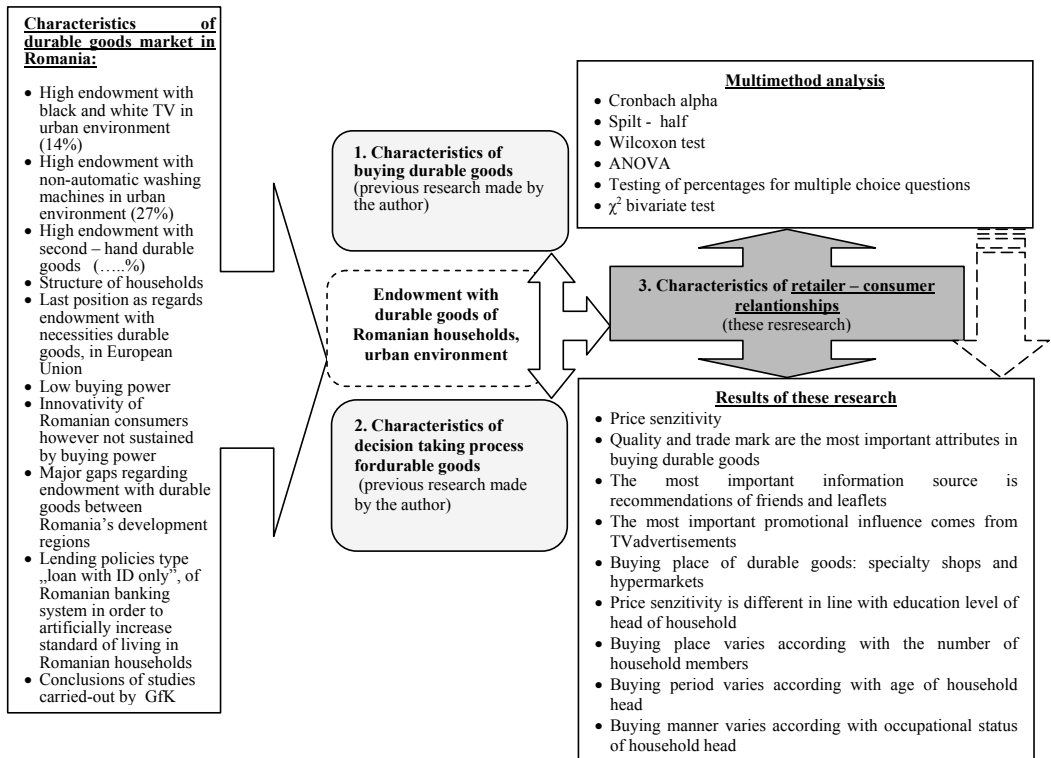
2. Literature review

In the foreign literature the first research with regard to this market is since 1979, when Kasulis, Lusch & Stafford were anticipating that, from a high number of reasons (including a high population – in the '80s – with age between 18 – 34 years) the durable goods will be the fastest segment of consumer market in the '80s. The conclusions of the three authors emphasized that:

1. *Middle population will show various purchase models of durable goods, and*
2. *Order of purchase the second TV or car in the same household varies according to the quality of the buyer as being the owner or the tenant of his house.*

The authors also suggest to study this issue in different geographical areas in the future (as it is one of variables that influences this purchase – see the case of Romania: Gabor et al. 2011) and also take into consideration variables such as, *social class of consumers* (this aspect was considered in this research, this being reflected by variables such as: *net monthly income obtained in a household and household head, level of education and occupational status of household head)*.

Modeling of relation between value, usefulness and holding of durable goods was studied and approached by Corfman, Lehmann & Narayanan (1991) by means of a convenience sampling on a sample of 735respondents for discretionary goods. They started in building up

assumptions for their research from the standard microeconomic theory that suggests that *budget allocation of households is carried-out according to: size of consumer budget and usefulness of validity as regards items provided by their price*. They concluded that, *when choosing durable goods, consumers cannot purchase dissimilar products and cannot compare objective or concrete objectives. Their selections are usually the result of comparisons carried-out more at abstract level and involves evaluation of products based on their ability to meet the basic values of consumers*. They invalidated the assumption that the order of purchasing durable goods is uniform in population, revealing there are differences according to the social class and the quality to be – or not – owners of endowed house. The consumption patterns carried-out by these authors showed the connection between combination of preferences, price information and budget restrictions for the household buying decision, but these patterns are not consistent for the basic utilities of durable goods, too. The two structural equations that have been tested and used in the pattern are:

- *Endowment with durable goods = f (usefulness, income, age)*
- *Usefulness = f (values of consumers, endowment with durable goods)*

The authors used as stimuli, discretionary durable goods in five categories: house entertainment, sport and exercises, pets, habits and luxury, and as processing methods of data collected by sampling, *factor analysis* and *group analysis*.

The issue of purchasing durable goods „on credit" was approached in 1993 by that analyzed this „tendency" (called „*consumer durable revolution*") in the '20s. The author considered that this type of credit (with direct illustration for car credits) was „created" not to help the consumer but, on the contrary, for the producers' success and their marketing strategies. If we carry out an analogy with the Romanian market in the surveyed period, what was considered luxury durable goods in the '20s [2], in Romania, as regards category of these goods, necessity goods were „placed" or purchased by credit (considered in the European Union as being part in the „basic" endowment of a household), for instance: double glazing, refrigerator, air conditioning etc. The author noticed that, after the Second World War (another analogy with Romania would be December 1989 when it shifted from the centralized economy in the communist period to the market economy) the consumption behavior of households has changed. The author noticed that one of the important reasons leading to this change is provided by *rising of advertising made to durable goods*[3]*that has as direct result –* and instant – *rising of sales as regards durable goods*. The final, general conclusion from this study is that the „*consumer durable revolution*" in the '20s, brought major changes not only to validity of credit (consumption) but to also advertising and that these changes were not the implicit results of intended endeavor of the market and affected – dramatically – consumption costs of households.

In the durable goods industry there is still a global feature namely: country where a product is designed is not the same with the country it produces, aspects related to the *impact of country of design and the country of manufacture over perceptions of durable goods consumers* was studied in 2006 by Hamzaoui & Merunka, the two authors suggesting an *empiric pattern based on the „of fit" concept of this bi – national quality of the durable goods*, *dividing the concept of country of origin* (COO – country of origin) *and tests the influence of country of design* (COD – country of design) *and country of manufacture* (COM – country of manufacture) *over the evaluation of bi-national durable goods consumer*. The paper providing important contributions and new insights to the judges of a consumer concerning the perception of quality for bi-national durable goods.

The specialty literature in the durable goods field, enriched in 2010 with another

research of authors Seitz, Razauk & Wells about *the importance of brand equity over the purchase of durable goods, singularized on air conditioning systems*, this study being dedicated – and useful – to producers and dealers of these durable goods, data being collected based on sampling on a random sample of 140 subjects. The surveyed variables were: *degree to which the price to be paid for this durable goods influences the brand*, *where information about this product is searched and demographic characteristics.* Therefore the results of research emphasized that, for this durable, *brand is a proof of product quality but it is not a characteristic criterium in selecting the product* and as *information sources* are used (in order of their importance): *friends and family, websites of producers, leaflets of producers* (but not type „golden pages"), *sellers and catalogues type,, golden pages" are not used as information sources in exchange are influenced by merchants when taking the buying decision as it helps them redefine their selection criteria and therefore choose that air conditioning system that reaches their purpose.*

 The issues of modeling the durable goods market have been approached in various senses, thus in 2010, Guiltian approached *the aspects of replacement decision of these durables*, the results of his research (practically a „stocktaking" of topic in specialty literature) emphasizing as *replacement reasons: their usefulness in conjunction with the depreciation rate and the discount rate of consumers, deterioration of intrinsic performances concerning durable goods may result in their total or part replacement thus resulting the „desire of something new" or waiting the validity of some new benefits.* Guiltian starts from the scientifically established presumption that replacement decision is based on the rational choice but – according to behavior research – and on psychological costs, frequent distortions of decision costs and is required by variable situations of replacement and motivations. However, the results of Guiltian's study should be adapted as the final consumer has been taken into consideration as a decision maker of the purchase and replacement of a durable good, in our study this decision belongs to household as a decision maker represented by the household head, studies in specialty literature emphasizing this significant aspect, that the purchase decision for a durable good respectively is taken within the household and not individually.

 Maintaining the expanded rate in the last years concerning the durable goods market survey, in 2011, Liberali, Gruca & Nique published the results of their research regarding *the effect of sensitivity(senzitation) to price and habituation over the purchase of durable goods*, emphasizing that product performances represent the key of consumer motivation to purchase discretionary goods for replacing a durable good, the consumer considering only those goods that provide additional performances compared to that they already have. Research conclusion is that, producers should provide products having a much higher performance with every new generation of products launched on the market when price sensitivity goes down every new purchase. The originality of this study consists in the fact that authors considered that *experienced consumers*, the issue for the market in Romania is that existence – or not – of some experienced consumers, considering that, households have adopted quite recently the replacement trend and endowment of household with new durable goods, trend that followed purchasing of second-hand durable goods (still valid on the car market as it goes on worldwide). This aspect of additional performances concerning a commodity launched on the market was also approached by Zhao, Meyer & Han in 2005 who emphasized that *consumers are often attracted by new versions of durable goods that provide additional elements; even if these new elements are never used (*have no real usefulness).

 Starting from the results published in the professional literature, for this study we have worded the following hypotheses and for whose testing we will use various statistical methods, the testing methods being mentioned for each hypothesis (Table 1).

Table 1 – Research hypotheses

Theoretical and practical frame from previous research (based on literature review)	Hypotheses of the research	Statistical method for hypotheses analysis
Price (8,07), followed by promotions (6.83) and product brand (6.80), post-sales service provided having the slightest influence (Gabor et al., 2009) Budget allocation of households is carried-out according to: size of consumer budget and usefulness of validity as regards items provided by their price.., when choosing durable goods, consumers cannot purchase dissimilar products and cannot compare objective or concrete objectives (Corfman, Lehmann, Narayanan , 1991). Sensitivity(senzitation) to price and habituation over the purchase of durable goods (Liberalli, Gruca&Nique, 2011)	H_1 –Price is the most important criterium in selecting durable goods H_2 – Quality is the most important criterium in selecting durable goods	Cronbach alpha Wilcoxon test
As information sources are used (in order of their importance): friends and family, websites of producers, leaflets of producers(Seitz, Razzouk, Wells, 2010) 57% of Romanians express their satisfaction following the use of a product or service in their discussions with the others (GfK, Press release, 13 Oct. 2011)	H_3 – The most important information source is provided by recommendations of friends	Cronbach alpha Wilcoxon test
Brand is a proof of product quality but it is not a characteristic criterium in selecting the product and as information sources are used (in order of their importance): friends and family, websites of producers, leaflets of producers(Seitz, Razzouk, Wells, 2010) The consumption behavior of households has changed… one of the important reasons leading to this change is provided by rising of advertising made to durable goods that has as direct result – and instant – rising of sales as regards durable goods (Hira, 1993) 61% of Romanian consumers prefer trade mark dedicated sites, while 41% prefer company sites (GfK, Press release, sept. 2011) Almost 2 thirds of urban consumers are willing to buy a product following a TV advertisement (GfK, Press release, sept. 2011) Friends' recommendations (6.58), followed closely by specialty press (6.53) and promotional leaflets (6.41), recommendations of shop assistants being the least used source but not a significant difference compared to the other sources (Gabor et al., 2009) (Gabor, 2011a)	H_4 – The most important promotion is provided by TV advertisements H_5 – the most important promotional source is provided by leaflets	Cronbach alpha Wilcoxon test
Consumers are often attracted by new versions of durable goods that provide additional elements; even if these new elements are never used(Zhao, Meyer, Han, 2005) Consumer perception of quality for bi-national durable goods (Hamzaoui&Merunka, 2006) Product performance is the „key" of motivation for discretionary buying in order to replace a durable good (Liberali et al., 2011)	H_6 – The most important attribute in purchasing durable goods is product performance and trade mark	Cronbach alpha Split half
	H_7 – The most important place of purchasing durable goods is specialty shop	Testing percentages for multiple choice questions
Sensitivity to price and habituation over the purchase of durable goods (Liberalli, Gruca&Nique, 2011)	H_8 – Occupational status and educational level of head of household directly influences price sensitivity in purchasing durable goods	ANOVA
Population with age between 18 – 34 years the durable goods will be the fastest segment of consumer market in the '80s (Kasulis, 1979) Middle population will show various purchase models of durable goods (Kasulis, 1979) Endowment with durable goods = f (usefulness, income, age) (Corfman, Lehmann, Narayanan, 1991) The purchase decision for a durable good respectively is taken within the household and not individually (Guiltinan, 2010)	H_9 – There are significant differences related to the place, period and manner of buying in line with various socio-demographic characteristics of head of household.	χ^2 bivariate

3. Sampling descriptions

In the sample formation, and consequently to ensure its representativeness, we started from national distribution of urban households according to two criteria, namely: the distribution of urban households based on occupation and level of education of the household head, he sample used in our research being illustrated in Table 2.The data was collected in May 2011, in Tirgu Mures, by filling in a questionnaire, at respondent's residence, having the quality of head of the household, filling in the questionnaire being carried-out by a previously qualified operator. Investigated population has been represented by urban households, in Tirgu Mures municipality, respectively.

Table 2 – Distribution in general population and sample according to training level and occupational status of head of household

Profession \ Level of education	GENERAL POPULATION						SAMPLE					
	Total level of education	Employees	Freelancers	Agriculture workers	Unemployed persons	Retired	Total level of education	Employees	Freelancers	Agriculture workers	Unemployed persons	Retired
Primary	21	1	1	8	1	40	25	1	1	1	0	22
Secondary	228	87	11	22	10	86	224	109	11	2	12	90
Higher	51	23	1	0	1	8	51	42	1	0	0	8
Total of profession		153	12	3	12	120		152	13	3	12	120
TOTAL		300						300				

To increase the representativeness of the sample, we considered appropriate to apply a scheme of combined sampling, respectively the *quota sampling* and *stratified sampling*, using two layers as follows:

- *first layer consists of the household head occupation*, including: *employed persons*, including the following categories: *manager, employed person with higher education, employed person with high-school education, unqualified laborer, freelancers*, respectively *employers and self-employed*, farmers, unemployed, retired.
- *The second layer* consisting of *the level of training of household head*, as follows: primary level: *no school, elementary school, secondary school*, secondary level: *vocational school, high-school, technical/craftsmen school*, higher education level: *college / university, postgraduate studies*.

In applying the *quota sampling* there have been distributed to each operator the quotas to be achieved while respecting the distribution of households according to statistics at the national level.

For information gathering stage we used a questionnaire administered by trained operators, namely trained students who have practical experience in this field, questionnaire containing a broad range of scales both classical and specific to marketing data and, implicitly, identification of socio-demographic variables of the household head characteristics
Indicators of hard core trend are provided by:

- *Average size of household* in the sample is *3 people*, *variation coefficient* calculated and equal to *7.6 %* thus showing a uniform population and an average representative within the sample;

- Of households with children below 18 years, *the average number of children per household* is *1 child per household.*
- *Average age of household head* is *49.37 years*, this value is the result of a high percentage of households of pensioners in the sample, 40 % respectively, the average being representative for 70 % of population (variation coefficient is 29.7 %).

For this study the following durable goods have been investigated (havign as starting point the official statistics of the National Institute of Statistics in Romania and EUROSTAT, to which have been added goods subject to foreign research), respectively**:** car, land telephone, mobile telephone, refrigerator, paraboloidal antenna   / cable, internet access, color TV, freezer/refrigerating box, aautomatic washing machine, dish washing machine, computer, laptop, LCD monitor, camera, digital camera, video camera, hi – fi audio system, DVD player, printer / multifunction, sewing machine, microwave, hood, cooker, radio cassette player, audio tower, bicycle, motorbike / moped, vacuum cleaner, cosmetic care appliances, body care appliances, double glazing, kitchen machine, air conditioning, home cinema system.

4. Main findings of the research

4.1. Presentation of results –analysis of item validity by means of Cronbach alpha and split - half method

As the Stapel scale has been used in the questionnaire to measure criteria used in choosing durable goods (price -ALEGPRET, brand - ALEGMARC, promotions/offers - ALEGPROM, post-sale service - ALEGSERV), and also, to measure sources of information that influence them in their selection (promotional leaflets-INFPLIAN, special press – INFPRESA, recommendations of friends - INFPRET, recommendations of sellers - INFVANZA)we have shown as response versions variables whose grouping we considered it was necessary to be tested, we used, by means of the SPSS software, *analysis of validity in relation to items in the questionnaire by means of two methods that evaluate internal consistency of items*: *split – half method* and *Cronbach alpha coefficient* as indicator of scale precision (internal consistency index)

Therefore, for variables measured on the *Stapel scale* and the *Likert scale*, results for calculation of the Cronbach alpha coefficient are (Table 3):

Table 3 – Results for reliability analysis – scale. Cronbach Alpha

Item codes	Item - total statistics			
	Scale mean if item deleted	Scale variance of item deleted	Corrected item – total correlation	Alpha if item deleted
Results for Stapel scale–buying criteria				
ALEGPRET	19.3933	28.5003	.2841	**.5419**
ALEGMARC	20.6767	27.6376	.2422	.5780
ALEGPROM	20.6633	23.6421	.4225	.4306
ALEGSERV	21.6767	21.9988	.4571	.3951
Reliability Coefficients **Alpha = .5657**		N of cases= 300		N of items= 4
Results for Stapel scale – information sources used				
INFPLIAN	17.0367	31.4401	.5626	**.6888**
INFPRESA	16.9200	31.7060	.6118	.6585
INFPRET	15.8733	36.9538	.5015	.7203
INFVANZA	17.4500	35.1112	.5245	.7081
Reliability Coefficients **Alpha = .7526**		N of cases = 300		N of items= 4

NOTE for Items codes: 1) price -ALEGPRET, brand - ALEGMARC, promotions/offers - ALEGPROM, post-sale service – ALEGSERV. 2) promotional leaflets- INFPLIAN, special press – INFPRESA, recommendations of friends - INFPRET, recommendations of sellers – INFVANZA.

For criteria *used in acquiring goods*, the *alpha coefficient* of 4 item-scale validity has a value of 0.57 proving that *scale has an average precision level*. Moreover if we remove the first item (*price*), the alpha coefficient concerning validity of the three remaining items (*brand, promotions, post-sale service*) decreases to 0.54 and as long as this is a very small change, it is better to keep the first item, *price*. This issue reveals that, households in Tirgu Mures are price sensitive in the buying process of durable goods. This aspect is explainable considering that, a very high percentage (40%) of households in the study, are made of pensioners, whose income is low compared to the other types of households.

For *information sources used in acquiring goods*, the alpha coefficient concerning validity of the 4 item-scale has a value of 0.75 proving that the scale *has a good precision level*, removing the first item (promotional leaflets) leading to declining alpha coefficient to 0.69, a significant decline indicating that these sources are important in buying goods.

For variables measuring *promotional influences in buying a commodity*[4]and those measuring *attributes taken into account in purchasing durable goods*[5]we wanted to test if included variables measure in fact these promotional influences, results being shown in Table 4.

For *attributes taken into accounting acquiring goods*, we have used both analysis methods of item validity, results being shown in Table 4. As through the first method, a value of the alpha coefficient was 0.72 we conclude that variables are measured on a scale with a good precision level, issue also sustained by results of the second method, split – half, where the Spearman – Brown validity coefficient has the value of 0.66 showing a mild to good precision.

4.2. Presentation of results – Wilcoxon test

Most variables are measured on nominal or ordinal scales, and therefore we consider it is useful to test *ranks of ordinal variables* within sampling. Therefore *the Wilcoxon test* has been used for linked scores *(ranks)*.

Within the research we requested respondents to rank the "*price*" variable one on the *Stapel scale* (providing scores/ranks) with values between 1 and10 compared to other three variables (*promotions, brand, post-sale service*) considered as a criterium in selecting goods again as attribute evaluated on a scale from1 to 5 alongside other 11 attributes, aiming to notice if ,evaluated by several attributes, *price* variable still has the same rank .

In the first case, it achieved the highest score, in the second case it has been gone beyond by another attribute, namely "*quality*". Therefore, we considered useful *to test the differences between the two mean ranks*, considered to have a relational nature as they were provided by the same respondents. Results achieved with the SPSS software as a result of applying the *Wilcoxon test* are summarized in Table 5.

It is therefore noticed that the number of *negative differences* is 275 and those *positive* are 10 and 14 *non-existent differences*, for a significance level $\alpha < 0.05$, Z rank has the value (-14.303) it means that, the difference between the two ranks is significant and hence, together with several attributes than those taken into account *when the Stapel scale has been used, the price is not so important in buying goods but their quality*. This result is an important one for retailers, emphasizing that, though price sensitive, consumers (households respectively) in Romania gives priority to quality of durable goods, aspect due to mainly the frequency of buying these goods.

Table 4 – Results for reliability analysis – scale. Cronbach Alpha for information sources and attributes that are taken into consideration when buying durable goods

Items codes	Item - total statistics			
	Scale mean if item deleted	Scale variance of item deleted	Corrected item – total correlation	Alpha if item deleted
Results for information sources				
INFL_TV	9714	.0874	.0000	-.6346
INF_RAD	.9714	.0874	.0000	-.6346
INF_PRES	.9714	.0874	.0000	-.6346
INF_STR	.9714	.0874	.0000	-.6346
INF_PMAG	.9714	.0874	.0000	-.6346
INF_PRIE	.9429	.0555	.0422	-1.0667
INF_GARA	.9429	.0555	.0422	-1.0667
INF_PMAR	.9714	.0874	.0000	-.6346
INF_AFIS	.9714	.0874	.0000	-.6346
INF_NET	.9714	.0874	.0000	-.6346
INF_AMAR	.9714	.0874	.0000	-.6346
INF_NICI	.0571	.1143	-.5601	.5500
Reliability Coefficients	**Alpha = - .6294**	N of cases= 300		N of items= 12
Results for attributes				
ACHMARCA	40.9064	33.4140	.2872	**.7058**
ACHGARAN	40.6789	33.3865	.4049	.6900
ACHPRET	40.3445	35.2131	.2260	.7114
ACHSERVI	41.6589	31.3061	.4225	.6850
ACHNUMM	42.5284	33.3775	.3100	.7020
ACHDSCOU	41.0100	33.2046	.3230	.7001
ACHCOMPE	41.9264	31.5382	.3829	.6917
ACHCALPR	40.4013	34.2142	.3836	.6941
ACHCALIT	40.1271	35.2791	.3594	.6992
ACHPERFT	40.5819	33.0025	.4268	.6868
ACHDESIG	41.5485	31.0069	.4469	.6809
ACHCONSE	40.8227	33.7168	.2647	.7090
Reliability Coefficients	**Alpha = .7147**	N of cases= 300		N of items= 12
Split – half Method				
N of cases= 300; N of items= 12; Correlation between forms = .4937;				
Equal-length Spearman-Brown = .6611				
Guttman Split – half = .6611; Unequal-length Spearman-Brown = .6611; 6 Items in part 1.6 Items in part 2.				
Alpha for part 1 = .5484. Alpha for part 2 = .6144				

NOTE for Items codes:
1) TVcommercials – INFL_TV, radio commercials -INF_RAD, press commercials -INF_PRES, street boards -INF_STR, promotional leaflets of shop -INF_PMAG, advice of friends or acquaintances-INF_PRIE, provided warranty -INF_GARA, promotional leaflets of brands - INF_PMAR, posters in and on public means of transport -INF_AFIS, internet commercials -INF_NET, the same brand that has already been used - INF_AMAR, no influence -INF_NICI. 2) Brand -ACHMARCA, provided warranty -ACHGARAN, price - ACHPRET, post-sales service -ACHSERVI, shop name -ACHNUMM, provided discounts -ACHDSCOU, personnel competence -ACHCOMPE, quality-price ratio -ACHCALPR, product quality -ACHCALIT, product technical performances -ACHPERFT, product design -ACHDESIG, energy consumption class –ACHCONSE.

Table 5 – Results for Wilcoxon signed ranks test

Variables tested	Ranks	N	Mean rank	Sum of ranks
Price_Stapel scale variable Price_11 attributes variable	Negative ranks	275	145.89	40118.50
	Positive ranks	10	63.65	636.50
	Ties	14		
	Total	299		
Recommendations/advice of friends_ Stapel scala variable Recommendations/advice of friends variable_10 variables	Negative ranks	299	150.00	44850.00
	Positive ranks	0	0.00	0.00
	Ties	1		
	Total	300		

We have also applied the Wilcoxon test for the ”*recommendations/advice of friends*” variable that, measured on the *Stapel scale* has achieved the best rank compared to other three variables (*special press*, *promotional leaflets*, and *recommendations of sellers*) and that, measured alongside other 10 variables has achieved the second rank, being gone beyond by “*TV commercials*”, the results achieved with SPSS being shown in Table 5.It is therefore noticed that the *negative differences* are 299 and the *positive ones* are 0 and a *non-existent difference*, for a *significance level* α < 0.05, the Z rank has a value of (-15.028) meaning that the difference between the two ranks is significant and hence, alongside several attributes than those taken into account *when the Staple scale has been used* “*advice of friends*” are not so important in buying goods but *TV commercials* have a higher influence *on the decision of buying goods*. This result emphasizes that, Romanian consumers are influenced and trust information shown in TV advertisements, thus proving their efficiency for these goods.

4.3. Presentation of results – processing of multiple choice questions
As the question in questionnaire with regards to the place where households within sample buy durable goods, contains multiple choice answers (Table 6), we consider it is necessary to test the significance of percentages obtained to this question, their distribution of the answers being found in Table 6.

Table 6 – Distribution of commodity acquisition places

Response version	Hypermarket	Supermarket	Special shops	Internet	Anywhere
Number of answers	89	20	128	9	74
Relative frequencies	29.7	6.7	42.7	3.0	25.0

Testing of proportion conformity in case of a multiple choice question–has the following formula and was the base for testing significance of percentages achieved by*hypermarkets and specialty shops*, as buying place of durable goods.

$$t_c = \frac{p_1 - p_2}{\sqrt{\dfrac{p_1(1-p_1) + p_2(1-p_2) + 2(p_1 * p_2 - p_{12})}{n}}}$$

where
p_1 = percentage achieved from specialty shops
p_2 = percentage achieved by hypermarket
p_{12} = common percentage of the two response versions

We consider the value of p_{12}equal to 0, hence it results t_c = 2.677 that has a higher value than its theoretical value for a probability of 95 %, 1.96 respectively, and it results that, the *difference is significant for a proportion of 95% of households, and thus special shops represent the main place of buying the durable goods for households in Tirgu Mures municipality.*

4.5. Presentation of results – ANOVA
Considered often as an extension of the t test of testing two means, ANOVA allows the testing of means in case when the independent variable shows more than three ways. Within the marketing research concerning the durable goods market in Tirgu Mures, respondents have been required to evaluate by means of the Stapel scale, built on range 1 (does not influence) – 10 (it influences very much) four criteria used in buying durable goods, *price, brand, promotions/offers and post-sale service*, respectively, mean rank related to the price variable ranking this variable to the first place. Distribution of ranks provided to the price variable – *dependent variable* – of those 300 households in the sample, differentiated

according to the education level of household head - *independent variable* –is shown in Table 7.

Table 7 – Distribution of scores according to education level of household head and descriptive statistics of ANOVA

Education level	Scores										N	Mean	St. deviation
	1	2	3	4	5	6	7	8	9	10			
Elementary school (4 classes)						1	1		3	1	6	8.33	1.51
Secondary school (8 classes)	2		1			3	1		2	10	19	7.79	3.14
Vocational school	1		1	2	2	5	7	12	13	40	83	8.60	1.89
High school/career-training school/ technical/foremen	1	1	1	5	6	12	13	36	28	37	141	8.01	1.97
College / university	1	1		5	7	1	4	6	6	10	41	7.17	2.52
Postgraduate education						1		2	4	3	10	8.80	1.23
Total	5	2	3	12	15	23	26	56	56	101	300	8.08	2.13

Starting from these data, we shall apply ANOVA with a single factor to evaluate statistically the impact of education level on providing ranks for the „*price*" criterium in acquiring durable goods; we use the SPSS software for data processing, the null hypothesis H_0 being *equality of means of the six categories of education levels*.

From data illustrated in Table 7are noticed the main *descriptive statistics*, the *number of cases, means* achieved by the price criterium typical to each education level and *standard deviation* on each education level and on total sample, respectively. Therefore it is noticed that, between the means of the six education levels are differences and, if these education levels would be regrouped in 3 levels, *primary*, *secondary* and *higher*, respectively so as elementary and gymnasium education corresponds to the primary level, we notice that between the two levels are differences between means (8.33 and 7.79). For the secondary level we group vocational school and high school/career-training school/ technical school/ foremen, the means of the two are different (8.01 and 7.17).The same thing being valid for the last regroup, the higher level comprises college / university and postgraduate studies, the two means being 7.17 and 8.80.

The results of ANOVA are illustrated in Table8, the F ratio being significant at 0.013 as being lower than 0.05 and is achieved by dividing the sum of deviation squares from the mean between groups to the sum of squares from the means within groups that provides us an F ratio equal with 2.928. That means that there is a significant difference between the six groups and therefore *the null hypothesis is rejected*.

Table 8 – ANOVA results

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	64.468	5	12.894	2.928	.013
Within Groups	1294.769	294	4.404		
Total	1359.237	299			

In conclusion, *the education level has a significant influence* (F = 2.928, p = 0.013) on the price as important attribute that is taken into consideration in buying durable goods.

As a result of applying ANOVA with a single factor to sampling data related to the *price* attribute as the governing attribute of buying durable goods, the conclusion is that is *not a significant group factor* and therefore the group of the 300 households according to the education level is also influenced by other attributes that have relatively high ranks that are close to the price attribute. The final conclusion being that, regardless the education level, household heads take into consideration the influence gathered by these attributes namely price, promotions, brand and post-sale service in the decision process of buying durable goods. Hence between the six education levels of household head there are perceptible differences of price as attribute they have taken into consideration when buying durable goods, issue that is explainable as people with an education over average, have functions or jobs that are paid better and hence acquisition price is not a critical factor in buying a good.

4.6. Presentation of results – χ^2 bivariate test

In order to test if there are significant differences statistically in line with the socio-demographic characteristics of household head (*age, education level, occupational status, gender*) and household (*number of people in household, households with children under 18 years or without children*) with regards to *acquisition way, acquisition place and acquisition period of durable goods*, we have used the χ^2 bivariate test, its results being shown structured in Table 9, being only retained the results with a statistical significance level lower than 0.05.

Table 9 – Results for χ^2 bivariate test

Tested null hypothesis H_0	χ^2 calculated	df	Asymp. Sig. (2-sided)	χ^2 theoretical	Conclusions
1. *There are no significant differences, statistically, as regards **acquisition place**, according to:*					
1.1. Number of people in household	11.357	6	.078	10.64	H_0 is rejected
1.2. Gender of household head	11.490	1	.001	10.83	H_0 is rejected
1.3. Education level of household head	13.827	5	.017	12.83	H_0 is rejected
2. *There are no significant differences, statistically, as regards **acquisition way,** according to:*					
2.1. Education level of household head	14.615	10	.047	18.31	H_0 is accepted
2.2. Occupational status of household head	53.778	16	.000	39.25	H_0 is rejected
2.3. Age of household head	17.185	8	.028	17.53	H_0 is accepted
2.4. Households with children and those without children	15.986	8	.043	15.51	H_0 is rejected
3. *There are no significant differences, statistically, as regards **acquisition period**, according to:*					
3.1. Number of people in household	28.655	18	.053	28.87	H_0 is accepted
3.2. Age of household head	19.624	12	.075	18.55	H_0 is rejected
3.3. Occupational status of household head	49.726	24	.002	51.18	H_0 is accepted
3.4. Education level of household head	19.617	15	.087	22.31	H_0 is accepted

The final conclusion obtained as a result of applying the χ^2 bivariate test for testing differences related to acquisition place, acquisition period and acquisition way concerning durable goods in line with various socio-demographic characteristics of households in the sample and of household head, emphasized that:

- There are differences related to acquisition place (supermarket, hypermarket, special shops and from internet, respectively) according to the number of people in household, gender and education level of household head;

- There are differences related to acquisition way(full when buying or by installments, respectively) according to the occupational status of household head and by having or not children under 18 years who are under family sustenance;
- There are significant differences related to acquisition period (festive season, promotional periods, any other period of the year, respectively) according with the age of household head.

5. Conclusions and future research directions

We have therefore emphasized through this research, by means of various statistical methods, that, in the relation between Romanian consumer - retailer, exogenous factors provided by social factors such as: income of household, social status (quantified in this research by means of education level and occupational status) have a major influence, both as regards acquisition of durable goods inwardly, as well as perception of this relation, quantified in research through variables such as: post-sale service and advice or recommendations of sellers.

However, on the other hand, in the relation consumer – retailer, promotion policy is an exogenous factor that is as important as in influencing the buying decision of these goods. Thus, we have emphasized a paradox, in fact another feature of Romanian consumer behavior and especially immaturity of Romanian market on one hand distrust of consumers in sales personnel, and on the other hand, the confidence in commercials used on various carriers. Moreover about this feature, the previous research of author outlined and emphasized the innovative character of Romanian durable goods consumer but….unsupported by its buying power.

Also, according to Eurostat data related to countries retail volume annual growth rate 2000 – 2010, if within EU – 27 countries, the growth rates have registered values between (-1.7) in 2009 and (+3.3) in 2000, in Romania these growth rates have registered values that are tenfold than average in EU – 27, (9.9) in 2009 and values between (+8.3) in 2003 and (+21.1) in 2007, respectively. Thus we conclude that the retail market in Romania has not maturated yet as well as the markets from the other EU Member Countries, extending, the same is with the durable goods market.

Financial implications of the loans made by Romanian households in order to buy durable goods have consequences on the financial-banking system in Romania that are visible in the economic recession period.

For the marketing researcher it is important to sample the consumers' opinions in order to discover what kind of problems and needs have consumers, how they occurred and especially how they will lead them to the goal of buying a consumer durable. By gathering such information, *stimuli* that are interesting for a certain product can be identified and marketing programs focused on these stimuli can be carried-out.

This research has some limits. One of them would be the period of research, year 2011 respectively, when the economic crisis effects felt in Romania due to the international Eastern-Western gap. Another limit is that research had as location a city in the Centre development area in Romania, area that is more developed economically and hence perceptions are significantly different compared to less developed areas in Romania. As a result, research should be started again and extended (or applied simultaneously) in another development area in Romania.

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[1] According to EUROSTAT quoted by the National Institute of Statistics in Living conditions of population in Romania – year 2009, p. 220.

[2]As a matter of fact the author considers that the '20s also had a major influence in economy, that apart the significant rise of household expenses for durable goods also led to an „instauration" of family income reallotment for durable and non-durable goods.

[3]T. Hira mentions as a sustaining source of this issue the study carried-out by the "Ladies Home Journal" in 1901 – 1941. In that time, the publication concerned increased both the number of pages dedicated to durable goods advertising and the size of advertising space related to durable goods.

[4]TV commercials, radio commercials, press commercials, street boards, promotional leaflets of shops, advice of friends or acquaintances, provided warranty, promotional leaflets of brands, posters in and on public means of transport, internet commercials, the same brand that has already been used, no influence.

[5]brand, provided warranty, price, post-sales service, shop name, provided discounts, personnel competence,quality-price ratio, product quality, product technical performances, product design, energy consumption class .

PSYCHOLOGICAL PRICING IN MODERN RETAILING: THE CASE OF WINE SECTOR IN HARD-DISCOUNTER CHAINS OF RUSSIA

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Abstract

The main goal of this paper is to show if is possible to find a modern retail chain in one of the world largest economies that uses exclusively psychological pricing, as a dominant competitive advantage, in order to predominantly direct consumer behavior. Pricing, as a source of competitive advantage is the least explained in marketing literature, therefore it is important to contribute and show how psychological pricing is a source of competitive advantage. It could be an evidence to support the firm belief which exists among many retailers that greater than expected demand occurs at psychological price points. We shall analyze different retail chains belonging to so call hard-discounters in Russian Federation using method of observation and choose one sector in order to check the hypothesis. Hard-discounters are chosen since they use pricing strategies as the most important element of marketing program, much more important than products, promotion or sales channels, while Russia has been chosen as the largest growing wine market in the world.

Keywords: retail, price, strategy, discounter, positioning.

1. Introduction

This paper shall focus on price tactic in wine sector of selected country-Russian Federation (Russia). Russia is the choice because this country has the largest growth of wine consumption, according to world wine organization OIV and BK Magazine, since it had growth of 121% over the period 2000-2012, compared to the growth in China of 67%, Canada of 62%, Australia of 38%, and USA of 37%. Price is a way of communication, which directs consumer behavior (Schindler, 1989), and it is the sole quantitative element of marketing mix since it is the only one that makes revenue. Psychological pricing is a concept where prices are set to odd-number prices to prevent bargains, or even number prices to imply quality (Lamb et al. 2012).

Research performed by Holdershaw (1997) has shown that retailers have bias in favor of psychological prices, and therefore this strategy needs to be examined more carefully. Having in mind that psychological pricing is based on communication and rationality, this is an extra element to confirm communicational characteristics of prices in general. This is especially important to understand for wine marketing, since wine quality is, according to Oczkowski

(2001) generally recognized to depend on subjective evaluations and cannot be precisely measured. The hypothesis of the paper is to show that is possible to find modern retail chain, hard-discounter, which completely focuses on psychological pricing as a main price tactic and positioning method in order to direct consumer behavior. Therefore, the goal is to check hypothesis if there is only one retail chain of such type which has a sole price tactics of psychological pricing in the wine sector. That is important in order to identify the key element of competitive advantage of the chain, which uses psychological pricings. This can be an evidence to support the firm belief that exists among many retailers that demand increases at psychological price points (Holdershaw et al. 1997).

Hinterhuber&Liozu (2014) have published the research were they found, after interviews with 50 executives worldwide, that pricing is important source of competitive advantage, and also the least explored source. Psychological pricings can bring many advantages to retail chains, such as increasing sales (Holdershaw 1995), attracting potential business deals, growing profits and customer base by increasing their loyalty, since the essence of psychological pricing is to set "fair" prices. According to Perner (2013) the prices are essential for marketing programs of hard-discounter retail chains, because of the intense competition among retailers, and increasing pressure to focus on volumes of sales more than margins on each sale. Furthermore, the most recent research of McKinsey (2013) has shown that the most efficient retail businesses are those focused at price strategies in discounted stores. Perception of consumers plays the key ingredient of psychological pricings because customers are guided by belief that they receive best value for their money. On the other hand, retailers very often, according to research of Levy et al. (2004) were unaware of how their pricing strategy influences their overall image, since optimal pricing is not a static problem.

It is important to make overview of different retail chains in Russia, and to focus on hard-discounters, since they predominantly have been using prices, as the most important element of their marketing mix, in order to attract final consumers. All other retail chains, besides prices, focus as well on their higher service, more educated staff, brand values, merchandising, etc., and do not attract consumers solely on prices, which is, on the opposite, strategy of hard-discounter chains in Russia, such as Pyaterochka, as part of X5 system, Magnit, Dixy and Monetka. Since most of those retail chains at certain extent use psychological pricings, it is challenge to find one chain that solely uses this price tactic. If we are able to justify such goal, that should be defined as an important competitive factor of selected retail chain at the market of Russia.

In order to justify our goal, we shall use field method of retail observation and establish price reports in all analyzed retail chains. Our field method shall be utilized in Moscow, due to the fact that predominant part of wine trade has been achieved in the capital of the Russian Federation. Since psychological pricing has been analyzed at most of marketing and international business literature, we shall link this knowledge with modern consumer behavior at one of the most interesting and growing market, such is the wine market of Russian Federation.

2. Literature Review

From the early days, when William Applebaum in Journal of Marketing, published in 1950, wrote article *Studying Customer Behavior in Retail Stores*, customer and consumer behavior were in focus of marketing science. There were many articles covering topics of how wine consumers have been influenced by various factors at retail outlet. Lockhin and Hall (2003) have developed concept on wine involvement and its influence on behavior at a store in a process of wine purchasing. Hollebeek et al. (2007) explained purchase intention as a function

of price, price discount and region. According to them, wine region has been much more important as a decision factor for high involvement consumers.

Ritchie et al. (2010) were examining price as an important factor in wine purchasing. They used method of focus groups in supermarkets of United Kingdom in order to understand the ability for wineries to attract consumers. Their interest was the low involvement, supermarket shopper, who ordinarily purchases wine like any other grocery item. The authors have found that the way supermarkets communicated wine and their focus on price discounts have caused to have prices as central part of retailer's marketing program. Barber (2012) has analyzed connection between environmentally safe wines and the attitude towards wine purchasing. His article has proven than only small portion of wine population is willing to make decision towards purchase of those wines. On the other hand, literature covering topic of psychological pricings is very broad. In the international marketing management literature, authors like Lamb et al. (2012) have explained psychological pricing among other pricings tactics like discounts (quantity, cumulative and noncumulative, cash, functional, seasonal, promotional), value based, single price, price lining, leader pricing, price bundling and unbundling. Rakita (2005) argues that psychological pricings is very often used in trade of high developed countries.

According to Lee and Carter (2012) consumer nowadays expect high quality at low prices. They also carry so called reference price that is their standard of price, or the price they believe to be fair. Psychological pricings were also called in literature as odd prices, magic prices, charm prices, irrational prices, intuitive prices or rule-of-thumb prices according to Dalrymple & Thompson (1969), Sturdivant (1970); Boyd & Massy (1972); Gabor (1977); Monroe (1990); and Rogers (1990). At the same time, as per Schindler & Wiman (1989) the use of odd pricing can be traced back over 100 years and from that period the use of psychological pricing in retailing has become widespread in many countries, including Russia. The reason behind consumer perception of psychological or odd prices has been explained by Brenner & Brenner (1982) due to the fact that people have only a limited capacity for storing information. They believe that because consumers are exposed to a continuous flow of information on prices, they store only the more valuable message, the first digits of a number. Also, research of Gendall et al. (1997) and Gendall (1998) has proven that psychological (odd) pricing generates greater than expected demand at retail stores. Beside importance of psychological pricing for consumer behavior in retail, there is an evidence of its value even in analysis of mergers and acquisitions (Agarwal&Zeephongsekul, 2011).

Research provided in this article has focus on psychological pricing in Russia, and will highly relay on all previously mentioned literature.

3. Factors of Wine Consumer Behavior

At the very beginning of this part, we need to distinguish difference between the terms customer and consumer. Thought most of researchers tend to explain consumer behavior, many of them do not make different explanation between consumer and customer behavior. Therefore, we will focus on data regarding consumer behavior, regardless if the authors made any difference between those two terms, since this differentiation is not beyond the scope of this paper.

Consumers are different in their behavior in process of wine purchasing, based on the level of their involvement. If they are high involved, beside the price, which is inevitable part of most decisions, consumer tend to look at brand, packaging (especially label design), country image, position at the shelf, winery owner and her/his prestige.

Generally, consumers who are involved can be attracted by any of six Ps from wine marketing program (Wagner et al. 2011). Therefore, wine consumers react on product

(perception of wine quality and previous organoleptic experience), price, placement (location), packaging (front label, back label, neck label, bottle and bottle shape, carton, extra package and awards), promotion (media, point of sales) and position (at the shelf and the side of the store).

Barber et al. (2006) have confirmed that the most important factor of wine purchasing decision, besides vintage and brand name, is a price. Their research also have found that other factors that were important for consumers include country of origin and grape variety. According to Bashar (2012) there are many factors, besides the prices, which influence conversion of store visitors to consumers, such as product quality and assortment, promotion, service, availability of products, and ambience of the store.

Shepherd and Sparks (1994) defined three groups of factors that influence consumer's choice: physical (geography, season, technology, economics); social (social, custom religion, social class, advertising, education); and physiological (heredity, allergy, acceptability, nutritional need). Even earlier, similar model has been created by Khan (1981), which includes seven categories influencing consumer's choice in food/beverage sector:

1) personal factors such as influence of other persons, familiarity, and emotional meaning associated with food/beverages;
2) biological, physiological, and psychological factors such as age and gender;
3) extrinsic factors, such as advertising and seasonal variations;
4) intrinsic factors (of the food/beverages), such as appearance, odor, flavor, and texture;
5) cultural, religious and regional factors including geographic regions;
6) educational factors including nutrition education; and
7) socio economic factors, such as income and the cost of food/beverages.

Since this paper has a focus on hard-discounters and the consumers who choose this type of retail, the most important factor which influences consumer behavior is, without doubt, a price, due to the fact that most of wine consumers in hard-discounter chains tend to have low involvement in a process of wine purchasing.

4. Psychological Pricing and Other Price Tactics for Retail Chains

Price tactics have their roots in behavioral economics and psychology (Ahmetoglu et al. 2014). According to their research, retailers influence perceptions and direct consumer behavior, based on price tactics they implement. As stated earlier, psychological pricing is one of many tactics which modern companies, including retail chains, use in order to communicate with consumers. Concept of price discrimination, which has been introduced by Farris & Quelch (1987) and Narasimhan (1984) had a focus on explaining that price reductions could be efficient when sizable market segments were targeted. Russian Federation is therefore interesting due to the size of market, and development of concept of hard-discounters, which are explained in next part of this paper. At the other hand, Shindler (1998) concluded that market segments have to have different price sensitivity in order to implement successful price tactics. We shall briefly describe all price tactics, according to general marketing literature of Lamb et al. (2012), and focus on those used by retail chains:

- discounts (quantity, cumulative and noncumulative, cash, functional, seasonal, promotional),
- value based pricing,
- pricing products too low,

- single price,
- price lining,
- leader pricing,
- price bundling and unbundling,
- psychological pricing

Discounts: there are several different types of discounts, but the basic goal of any discount is to stimulate consumers to purchase the goods at irregular basis. Besides trade credit, cash discounts provided for consumers, are among the most important financial managerial decisions (Ting & Chung, 2014). At the same time, Zielke (2014) has shown that value perception defined in discount policy of shops is the most important factor of consumer behavior in discount stores, which are in the focus of this paper. Therefore, quantity discount is offered to consumers who purchases more than certain specified quantity (for examples in Russia it is common to offer 1 bottle of wine free, who orders 10 bottles, so in total customer pays only 9 bottles, or she/he received 10% of discount to base price).

There are two basic types of quantity discounts, cumulative, which means that buyer gets discounts for all deliveries during certain period of time (month, quarter, per annum), and noncumulative which implies only to single order. The first type stimulates consumer loyalty, while the other type is only focused to get instant larger demand from the consumers. On the other hand, there are cash discounts which imply lower price if consumers pay in cash. Since modern chains use many loyalty cards that guarantee certain benefits, they are also motivated to grant discounts for cash in the situation when liquidity issues arise. Functional discount determines different prices for different trade partners, and it is typical for cash and carry systems, since retail chains want to stimulate loyalty of certain type of (professional) customer, like a restaurant, hotel, bank, etc. Seasonal discounts have function of stimulation of demand for products that are being sold in the period out of the season (for example to stimulate consumption of red wines during summer, or white during the winter). Seasonal discounts are important both for retail chains and producers in order to keep optimal stocks at the store during the whole year. Promotional pricing means certain allowance to retailer received from supplier in order to better position its product at retailer's shelves. It is usually used for secondary positions at shelves, and special advertisements in retailer's booklets.

Value-based pricing: the concept implies that retailer first looks at competitors and than set a price which is believed to be valued by its consumers as fair. Customers' cognition is the crucial factor in this type of pricing (AlinezhadSarokolaee et al., 2012). This concept has become even more important in the period of the recent economic downturn and by adoption of the new technologies, as stated by Grewal et al. (2012). Nowadays, consumers are offered not just a price but to understand the value of the product. For example, in the USA Walmart's competitors were using this approach in order to explain to customers that they are receiving more value by purchasing certain product at prices, which were more beneficial compared to Walmart. This concept is specially important in period of recession, such as recent global crisis, when many products were offered at same price but the package has been larger, with so called gratis goods (for example consumers paid for 5 kg of certain detergent, but received 5.5 kg, or 0.5 kg as gratis), which they have perceived as higher value.

Pricing Products Too Low: when a retailer wants to cover large market share in short period, it can maintain very low prices. This price tactics, as well as single and line pricing, lie on consumers' trusting beliefs and purchase intentions, according to White & Yuan(2012). However, this is only short-term approach and cannot be profitable in a long run. New companies that have a goal to be acquired by larger retail chains can use this approach, and

they are only focused to get more consumers, and larger market share, hoping to compensate all losses once an acquisition has been concluded.

Single Price: this tactic sets all goods and services at one price such as concept "Buy everything for 1 dollar". Idea behind this concept is to save time to consumers and to focus their attention to limited assortment. The largest problems that have retailers performing this tactic is how to maintain the costs, especially in case of inflation, which has been very important obstacle of economical development in Russia for the previous two decades.

Price Lining: the concept of price linings is to set few prices-lines of each product category and to determine all items within these categories. In this case all products belong to one of few price categories. For example, entry wines for 200 rubles, middle segment for 300 rubles, higher middle segment with price of 400 rubles, and luxury wines with price of 500 rubles. This tactic, although being simple for consumers and therefore saving their time, brings many possible problems. Retailers can always keep larger stock of products which they purchased at lower than average prices, or change line and its assortment, or they could even have very fixed lines and its structure, but to risk their long-term profitability, due to often increases of wine production costs, as result of specifics of every vintage.

Leader Pricing: the logic of this tactic is to set at very low level (sometimes below its costs, which can be illegal in Russia) prices of certain products, which should attract consumers to store, and than refocused their mind to completely another items, that are priced at level which brings overall sufficient profitability to retailer. Prices that are set low are always related to already established brands in order to easily attract consumers. This tactic is also called loss-leader pricing, because loss made at certain items has been compensated by profit from sales of another items. There is a theoretical approach developed for the loss-leader pricing (In & Wright, 2014) where companies promote low prices (below cost) for certain products in order to attract consumers for other products which are not promoted by low prices, but the consumers get perception that these products are also priced fairly.

Price Bundling: when two or more products are being sold and marketed as one SKU (stock keeping unit), it is a case of price bundling. For example, in wine sector it is common to sell item constituted of bottle of wine and a glass for red, white or sparkling wine. In many cases, consumers are offered not one bottle of wine, but the whole case of 6 or 12 bottles (in the USA and Canada standard case has 12 bottles). When products are sold in a bundle, it is harder for consumers to compare prices, and therefore they do not tend to have a belief that they receive lower value. Even more, previous research showed that consumers are more certain of the quality of the bundled products (Kwon & Jang, 2011). Therefore, selling in a bundle could increase general demand of products. Completely opposite is tactic of unbundling, when consumers want to know the price of every item, previously sold in the bundle. This case usually happens in periods of economic downturns.

Psychological Pricing: the concept has been previously explained in this paper, and is also called odd-even pricing. Basic logic behind psychological pricing is influence of prices to consumer's perception in order not to bargain, which is result of odd prices, or to value the product as prestige quality, which is the result of even prices. When odd numbers are used, as we shall see in the results of price observations in Russia, prices are usually set 1 ruble lower than round figure (100,150, 170, 200, etc.) Consumers should position products with such prices as fairly defined, without any need to bargain. Consumers were positioning products' prices as better value when retail chains have used odd psychological pricings.

5. Overview of the modern retail in Russia

There are four main types of the modern retail in Russia:

- Supermarket chains,
- Hypermarket chains,
- Cash and carry systems, and
- Hard-discounters.

Supermarket is a large form of the traditional grocery store, with self-service of food, beverage and household items. Supermarket is smaller and with limited assortment compared to hypermarket. Hypermarket is covering more than 10,000 square meters and is combination of supermarket and department store. It has, under one roof, full assortment of food and beverage items, as well as other general merchandise. It is also called "big-box market". Cash and carry system is a wholesale warehouse with focus on limited number of professional customers, which usually belong to any of these: shops, restaurants, professional users, caterers, institutional buyers, etc. Customers settle the invoice on the spot in cash, and carry the goods by themselves. They enter cash and carry center only after validation of their individual ID cards. Hard-discounters have main focus on price, which should be low during whole year. Usually prices tend to be 20% lower than at supermarkets, but that depends of category of products. In Russia there are four retail chains belonging to this type, as shall be later explained.

Importance of retail for total wine sales in Russia, according to data research group Euromonitor 2011, comes from the fact that off-trade counts for 93% of all wines sold in Russia.

Table 1- On-trade vs. off-trade in Russia

Off/On	Value Sales %	Volume Sales %
Off-trade	83.5	92.7
On-trade	16.5	7.3
Total	100	100

Source: Euromonitor, 2011

Among the following chains, if we exclude first four which are hard-discounters (they will be analyzed later) and fifth since it does not carry wines, specially four are important, and among them two are foreign based: Auchan (France) and Metro (Germany), and two are Russian based: O'Key and Lenta.

Table 2 - Retail chains in Russia

No	Retailer	Country of origin	Chains	Sales (RUB m)	Store count
1	X5 Retail Group	Russia	Pyaterochka	283,948*	2,525
2	Tander	Russia	Magnit	287,732	5,006
3	Dixy Group	Russia	Dixy	68,901	868
4	Monetka	Russia	Monetka	35,220	326
5	Sistema RegionMart	Russia	Chibis	13,421	121
6	Auchan Group	France	Auchan	205,147	48
7	O'Key Group	Russia	O'Key	93,134	42
8	Metro Group	Germany	Real	29,508	18
9	Lenta	Russia	Lenta	50,940	42
10	COOP	Germany	Selgros	4,284	5

Source: http://www.russiaretail.com/Russian_Retail_Data.shtml

German based Metro Group with its cash and carry format, as well as French hypermarket chain Auchan, have entered Russian market in 2002. Metro has been implemented its internationalisation strategy with focus to escape the over saturation of its home market. Metro also owns the Real hypermarket and the Media Markt electronics chains, and consequently creates majority of its turnover outside its home country. On the other hand, French based retail chain Auchan has been focused to position shopping experience as a more convenient version of a stroll around an outdoor market, with constantly positioning its optimal price-quality ratio. Auchan is also the principal initiator of the Mega Malls.

O'KEY Group launched its first hypermarket in St. Petersburg in 2002, very quickly it became the retail leader of that region. From that period, fast growing has been its strategy. The plan is to have its stores in all of 25 largest Russian cities by 2015.

Lenta is another hypermarket chain, which started its expansion in St Petersburg from 1993. Lenta has strategy in providing customers with high quality goods, a large selection and the low by eliminating the middleman where possible. Today Lenta is present in 37 cities in Russia and has 16 hypermarkets.

The most important factor of success of retail chains in Russia, both domestic and foreign, has been their ability to frame profitability into a long-term perspective. This factor is critical in order to understand retail business philosophy in all emerging markets. We shall focus on hard-discounters because we want to examine pricing strategies, not brand, which is also important factor in consumer behavior. Consumers who shop at discounters are predominantly focused on low prices and therefore hard-discounter retail chains are the suitable laboratories to examine psychological pricings. The following are hard-discounters in Russia: Pyaterochka, Dixy, Monetka and Magnit. It is interesting to confirm that all existing hard-discounters are Russian based. Having in mind that foreign retail chains do posses higher level of know-how, based on their high level of internalization and consequently high level of transfer of knowledge, people, materials, money, as well as already established brands, it has been reasonable that Russian based chains were creating their consumer strategy predominantly focusing at prices, in order to create competitive niche. On the other hand, government has protected this price-based strategy with high entry barriers, in the form of complicated title registration procedures for hard-discounters. Therefore, it can be concluded that foreign advantage in the hard-discount sector has not jet been achieved, and that many challenges will arise in the future, when foreign based hard-discounters enter the "scene".

6. Price observation at the hard-discounters

In the following four tables we shall see results of price observations in hard-discounters in Russia. We have used in-person single price observation, and five stores were randomly chosen from every of four retail chains belonging to the type of hard-discounters. Totally 20 stores were analyzed. Period of observation was the last week in May of 2014. The single observation has been sufficient since the prices were the same inside one chain at the time of observation. At the same time, due to the fact that a policy of assortment varies among hard-discounters, we could not have the same number of wines observed in every chain. In order to eliminate branding bias, wines have been numerated, not described by the brand name.

The goal is to check hypothesis if there is only one retail chain of such type which has a sole price tactics of psychological pricing in the wine sector. Psychological pricing, as explained earlier, in the case of odd numbers, and as we shall see in the results of price observations in Russia, commonly means that prices were set precisely1 ruble lower than round figure (lower than 100,150, 170, 200, etc.).

Table 3 - Case of Dixie (5 stores)

Type of wine	Retail shelf price in rubles
Red wine 1	340
Red wine 2	161
Red wine 3	279.70
Red wine 4	323
White wine 1	218
White wine 2	234
Sparkling wine 1	253

The case of Dixie shows that company is not using psychological pricing as sole price tactic as per concept of psychological pricing we have explained earlier, since all prices were not set one ruble lower than round figures, but either higher or lower.

Table 4 - Case of Magnit (5 stores)

Type of wine	Retail shelf price in rubles
Red wine 1	217
Red wine 2	409.10
Red wine 3	349
Red wine 4	114.90
White wine 1	183.40

Magnit, as showin in the Table 4, has been using psychological pricing, but not as a sole price tactic.

Table 5 - Case of Pyatorochka (5 stores)

Type of wine	Retail shelf price in rubles
Red wine 1	225
Red wine 2	265
Red wine 3	290
Red wine 4	355
White wine 1	297.15
White wine 2	275
Sparkling wine 1	265

Pyatorchka does not use, as shown in Table 5, psychological pricing as its sole price tactic.

Table 6 - Case of Monetka (5 stores)

Type of wine	Retail shelf price in rubles
Red wine 1	189
Red wine 2	249
White wine 1	149
Sparkling wine 1	129

As it has been showed in the Table 6, we have checked most of the wine categories (red, white, sparkling) we can confirm that for all wines only psychological pricing has been utilized in hard-discounter chain Monetka. All prices were set just one ruble lower than round figures. This is very important aspect of competitive advantage of Monetka, and we believe that it is valuable for this retail chain to continue with such concept.

7. Conclusions, Implications and Limitations

Russia has been the largest growing wine market globally, as per the data presented in this paper. Among retail chains that operate in this country, hard-discounters are specially depending on price tactics that were described in the paper. Psychological pricings bring advantages to these chains in many aspects, like increasing demand, attracting new business deals, growing profits and customer base by increasing customer loyalty. Research that concerned positive effects of psychological pricing as a source of competitive advantage, has been presented in the paper. As per Hollebek et al. (2007), wine regions are more important behavioral factor for high-involvement consumers. Since this paper has a focus on the hard-discounters, where consumers tend to be low-involvement, other factors are much more important than wine regions.

Psychological pricing, as one of the price tactics, is important factor of consumer behavior at a store, according to Ritchie et al. (2010). This paper has provided contribution because this factor is even more important at the hard-discounters, which were analyzed here. At the other hand, this paper provides primary data based on in-personal single price observation that has been performed in all of four hard-discounters of Russia and it has shown than only Monetka is solely utilizing psychological pricing as its tactic. Therefore it is considered to be very important source of competitive advantage of this retail chain. Paper also discussed studies that have shown that price innovation, as a source of competitive advantages for modern companies, will be more utilized in the future. Therefore, this paper could contribute to managerial decisions, especially at retail companies, to more focus on psychological pricing as a source of their future competitive advantage.

At the other hand, this paper could have social contribution. Since Russia has "Dealcoholisation" as the new concept introduced few years ago, analysis of wine consumer behavior and retail tactics that increase such consumption, were recognized in Russia as one of the ways to succeed in reducing the number of heavy drinkers by changing the structure of alcohol consumption toward wine and less alcoholic spirit products (40,2014).

The future research can follow up with other sectors, such as food, beer, spirits, etc., and analyze if psychological pricing can be important factor of competitive advantage in other sectors as well. At the other hand, we were focused on hard-discounters. Having in mind that there are four major types of retail that have been operating in Russia in 2014, research can be performed of psychological pricing in supermarkets, hypermarkets or even cash and carry centers. Also, besides psychological pricing, we can make research of any other, previously discussed price tactics, for any of retail type, which have been defined and explained in this paper.

Limitations of this paper predominantly come from the size of sample (20 stores) and the fact that all of them have been located in Moscow. Also, as the wine consumption in the capitol of Russian Federation has the largest part of total consumption in this country, a research can be obtained in other large cities of Russia, like St Petersburg, Niznji Novgorod, etc. At the same time, as have explained in part 5, at this moment all hard-discounters have been Russian based, with Russian ownership. Government has protected this retail type with high entry barriers, in the form of complicated title registration procedures for hard-discounters. Therefore, it can be concluded that foreign advantage in the hard-discount sector has not jet been achieved, and that many challenges will arise in the future, when foreign based hard-discounters enter high growing Russian market.

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CONVERGENCE AND OPTIMUM CURRENCY AREA, AS ADVANCED ECONOMIC INTEGRATION

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Abstract

In 1961, in the earlier stage of the European integration, professor Bela Balassa proposed a five successive phase model. Today, the half century experience on integration and corresponding literature issued lets us see rather two big phases (instead of five). The one would be the incipient integration, that came to enlarge the economic openess and internationalization and shaped: (i) free trade area (FTA) and (ii) customs union; the other would be the advanced integration, in which internationalization would be replaced by the unique-common market and other two commandments would replace or just reshape the older FTA and customs union into: (iii) economic convergence and (iv) optimal currency area.
The last two will be emphasized by our paper, as for their current description-analysis in the literature.

1. Introduction

I would like this paper to continue the previous one (Andrei, 2012), for the preoccupation on the European integration outline, as considered update. In *résumé,* polemics were with the integration model of Balassa (1961) through here criticizing at least all: (i) the *economic and monetary union* that had been assumed to have ended the integration process; (ii) integration, as not only successive, but also *distinct* phases from one-another; (iii) limiting integration to its 'liberal' part of development (i.e. through *common-unique* market, competition, economic union and common currency – whereas today the 'other European economics', the *non-liberal* one of budgets, policies, structural funds and policy, cohesion, sustained and regional development and others has become as obvious as the liberal component of the European integration.

Also in *résumé,* our retort to the Balassa's model – more precisely, to the 'liberal' component of the economic integration – comprises only two big (development) phases, meaning the *(a) incipient* and *(b) advanced* integrations, as in the following Table 1.

Table 1 -- Outline of the (European) integration process

Integration	Incipient	Advanced
Basic structure	International	Unique-common market
Commandments	Free trade area	Convergence*
	Customs union	Optimum currency area

* See several types of convergence considered in the literature: economic, political and institutional.

Just mentioning that these phases proposed are no longer assumed as so deeply distinct from one-another, as in the model of Balassa – i.e. even the primary *free trade area* phase might contain germs of the *optimum currency area (OCA),* as it will be read below.

My previous paper here referred did conclude on a presumable 'end of integration' for a moment in which specific contradictory aspects would end, when the EU (or just the 'Euro') area would work like all States federations and when the institutional inventory will become complete, as it is in individual federations or just States. As for this paper, a certain 'drawing-back' is preferred in the sense that details of such a time-development will dominate. *Convergence* and *optimum currency area(OCA)* will be here below debated as specific to the advanced phase of integration, as free trade area and customs union stay specific to both the early phase of the EU and to all the other than EU integration options world-wide. There is not only similarity between the two phases of integration – i.e. convergence and OCA are different issues than the free trade area and customs union, as described below in our text.

Some space limits impose to our approach to stay close to conceptual developments in the literature, meaning distant from either details on the EU-Euro-Zone, or debate on current crisis.

2. The economic convergence concept in the literature
2.1 Definition and perception
There are three definitions of the *economic convergence* in the literature (Frankel, 2004): (i) *synchronization* of business cycles – against *asymmetry shocks*[1]**;** (ii) *similarity of economic structures* – e.g. weight of agriculture and industry in total GDP; (iii) *similarity of productivity and non-tradable weight* in the total economy. Iancu (2005, p.6) completes such portraying through considering the internal distinction among: *real, nominal* and *institutional* types of convergence – of which the *economic* convergence stops to the first two of these.

Equally through its conceptual approach, convergence equalizes a *structural similarity* between national economies (Dinga, 2008[2], pp. 17-19), assumes a list of *quantifying indicators* (Dinga, 2008, p. 19) and lays in the proximity of other (economic) terms like: similitude, harmonizing, complementarities and even redundancy (Dinga, 2008, p. 21).

The same literature indicates three *perceptions* of the economic convergence. The one points on the 'market forces' and stays related to the neoclassical theory of economic growth. The second one in line considers rather a 'non-convergence' finding of the contemporary era. Thirdly and finally, convergence is seen as possible on the competition market, but the

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[1] This is a term rather proper the other concept approached in this paper -- i.e. the *optimum currency area* --, but this remark is for once more illustrating the proximity between these two concepts in the today understanding.
[2] And on-line: http://www.edinga.ro/files/studii/7_ro.pdf

difference from the neoclassic view here consists in the presence of *policies* instrumented (developed) for convergence implementing and presumably appropriate (Iancu, 2005, p.7).

2.2 Classification

The α type convergence sees what is meant by *structural similarity* between economies. This type of convergence is considered able to absorb the *asymmetric shocks*[3], but equally insufficiently clarified as in theory – i.e. what kind of structural similarity is about? – and in methodology – e.g. what about economies of different dimensions? Are regional non-similarities also able to induce convergence (Dinga, 2008, p. 26 and the following)?

The β type convergence is pretty different story. It focuses on the link between the 'classical' and qualitative view on the convergence dynamic, on the one hand, and 'catching-up' type processes – that display different dynamics on shorter terms in favour of less developed and developing countries – on the other. As in its larger sense, the β convergence regards all about economic 'speeds', meaning that it even starts from the dynamic *of a national economy towards its own equilibrium,* as the primary definition of convergence.

The same type of convergence reaches its own regression equation and coefficient (Sala-i-Martin, 1997, p. 58) and breaks down into: *β -absolute -- higher growth for developing economies, as compared to the developed ones ; β - group* -- β absolute, plus considering countries' grouping on criteria of similarity in industrial technologies, institutions and economic policies applied; *β -conditioned* -- the previous, plus additionally considering the vector of determinant factors of growth.

Criticism for this zone of convergence classifying comes from other several analyses. Quah (1993) here accuses the '*Galton type error*' related to self-correlation statistics. Boyle & McCarthy (1997) pretend that even the β type convergence, in its literal definition, might see itself wrongly reflected by its found coefficient and Friedman (1992) argues that it can be well replaced by the *variation coefficient of per capita GDP* within the region. Boyle & McCarthy (1997, pp. 57-58) suggest that these above three (sub) types of the β convergence would actually base on the need created for such an internal distinction, as directly, and notice, as the basic truth, that the β convergence doesn't prove able to replace another type, the *σ type convergence* – that is the similarity regarding per capita GDP and directly related economic indicators, the 'catching-up' process equally considered (Dinga, 2008, pp. 27-28).

As concretely, the σ *type convergence* calculates through the per capita GDP *coefficient of variation*[4] (Friedman, 1992) or *standard deviation* (Dalgaar & Vastrup, 2001, pp. 283-287) and includes two series of indicators for value dispersion (from average values): the (a) *simple* ones -- basic dispersion and amplitude – and (b) *synthetic* ones – linear and squared average dispersions, variation coefficient (Pecican, 2006, pp. 1-4). Note that such negative assessment that all the σ coefficients basically develop clears the way for assessing 'catching-up' as ' *the higher the dispersion, the higher its speed, the more positive evolving throughout de facto conversion'* (i.e. the β-type conversion, actually the per capita GDP/ Iancu, 2005, pp. 14 & 27).

The other two types of convergence in debate are ∂ and γ types (Dinga, 2008, pp. 27-28). The previous regards the similarity of *real convergence* factors (Frankel, 1999, p. 4). These factors do group into third levels. The basic one sees just the common currency that countries trade in-between (Glick & Rose, 2001). The second one comprises "common language(s),

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[3] As one more conceptual relation between convergence and optimum currency area (OCA/ i.e. in the other part of this paper).

[4] *Transversal*, but also *chronological* data series are here used (Iancu, 2005, pp. 21-22).

colonial history, and remaining political links". The "third category of factors" mean what Frankel (2004, p. 4) calls "accidents of history" …"that influences both currency choices and trade links".

Finally, the latter γ type convergence regards the business cycles synchronizing. Dinga (2008, p. 28) generally agrees the literature's arguing about its essential role in 'turning the asymmetric into symmetric shocks', but slightly doubts its long-life in practical terms.

2.3 The real convergence criteria

The description regarding the nominal convergence and its Maästricht (1992) criteria won't be here repeated[5]. And unlike Dinga (2008), I find the EU's (actually, ECB's) absence from any debate about *real convergence* criteria enough consistent with the Organization's general attitude on this topic. Just here reminding the *nominal* convergence criteria and so the basic distinction between these and the *real convergence criteria* for the reason of mentioning Dinga (2008, pp. 36-39)'s contribution to drawing a list of what the author calls *inter-conditioning* criteria between the *nominal* and *real* groups of them. This is what the author calls 'nominal-real transmission channels' and three such general indicators are here enumerated.

The *real interest rate* (Dinga, 2008, pp. 36-37) deals with components of both the aggregate demand (consumption, government expenditure) and supply (investments[6]). Secondly, the *inflation rate* is the way of affecting (reducing, when inflation rises) the money purchasing power, so the aggregate demand, but indirectly the aggregate supply, as well. And thirdly, the *exchange rate* takes a behaviour similar to the one of wages – as nominal and real, similarly to the exchange rate --, the difference made consisting in the proximity of the exchange rate to the openness degree of the economy (Dinga, 2008, p. 37).

Lastly, Table 2 enumerates the *real convergence criteria* by individual and groups (Dinga, 2008, pp. 45-47), then the author organizes them into three *'classes'* of criteria (Dinga, 2008, pp. 48-49), but these classes do not pretty match the previous list of individual criteria.

The class of *(i)* '*catching-up'* criteria includes items like average domestic supply, openness degree of the economy and average gross wage. The class of *(ii) sustaining* criteria includes: the net savings rate, labour productivity in commercial sectors, GDP-distribution and the sold of the current account of the external balance of payments. Lastly, the *(iii) resilience* class of criteria contains items like national revenue on activities, domestic absorption, employment rate and government.

2.4 Criticism, controversies and other aspects

As the above title suggests, this paragraph belongs to debatable aspects, as update. So, there will be below about three directions of studies drawn on the economic convergence concept so far in the same literature.

2.4.1 Neoclassics, Solow and the 'anti-convergence'

This aspect might well have had its place as introduction of all the above descriptions, due to its historical order and bibliographical dimension. Roughly, studies of convergence did start in the mid 1950s in the neoclassical zone of thinking. Solow (1956) has his own (famous)

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[5] See my opinion about in Andrei (2010) that these Criteria didn't arise from any scientific debate that the European Monetary Institute (EMI), its following European Central Bank (ECB) or other EU forum would ever largely or publicly propose.
[6] I see investments on the aggregate supply side as arguable.

theory that bases the today convergence description, as both economic equilibrium reached and 'catching-up' processes: *the same saving-investment rate helps growth and development at different degrees – i.e. it is converse to the capital stock that this rate relates to.* In other words, the capital stock agglomeration lowers the returns to investment, as much as less developed economies or those destructed by wars and other external causes, on the opposite, are, conversely, able to acquire higher returns on the same investment made. The Solow's model's restrictions are those of: (a) equal saving-investment rates for all countries and (b) general decreasing returns on capital stock. Plus, a '*steady state*' to be reached by all economies – when zero growth rate of capital stock related to the unit of labour – is also concluded.

Table 2 -- Real convergence criteria

Group	Item	Of Which:	Notation
(a)	general indicators		
		population	P
		active population	Pa
		people employed	EMP
		average number of employees	EMPav
			All of the above, on regions and activities
		GDP- domestic supply	GDPs
		GDP- sources	GDPk
		GDP-distribution	GDPq
		exports	X
		imports	M
		government	G
(b)	revenues & expenditures		
		households' revenue	HR
		gross nominal wages	Wagn
		net nominal wages	Wann
		gross nominal labour costs	LCgn
		households' expenditure	HE
(c)	others		
		net savings	Sn
		domestic demand	Dd
		domestic absorption	Ad
		direct fiscal pressure	DFP

Source: Dinga (2008, pp. 45-47).

Mankiw (2003) illustrates the Solow's theory of growth at least by the extreme post-war cases of Germany and Japan, with their 'catching-up' developed economies, but many other authors share a fully different position than that. Thirlwall (2001) founds that 'empirics never confirmed' this neoclassic theory and others point to the *enlarging development gaps,* as a contrary world-wide trend, as enough obvious. The poor countries of the Third World see themselves forced to internationally specialize in basic product(ion)s, the international factors' mobility closed stops convergence trends as well and the revenue multiplier plays for reach countries and equally against the poor and developing areas (Myrdal, 1957; Thirlwall, 2001; Kornai, 1974), all of these as a true 'anti-convergence' phenomenon of the

contemporary era (Iancu, 2005, pp. 7-15). New and newly-based models point to the 'out of use' for the neoclassic thinking on growth-convergence in diverse ways – e.g. associating to the physical capital or to β-σ parameters like 'convergence speed' for the negative value of parameters, or 'convergence-divergence' for value dispersion (Arrow, 1962; Lucas, 1988/pp. 2-42 ; Romer, 1986).

The current literature in the area sees itself splitting into pros and cons, but not only. On the pros side, the ones reconsider growth motors like savings and growth of population (Mankiw; Romer; Weil 1992 ; Islam 1995), the others play the same for capital and labour mobility (Barro; Sala-i-Martin; Blanchard; Hall 1992). On the opposite side, authors rather see divergence between large groups of countries, versus some existing 'clubs of convergence' (Baumol, 1986; Durlauf, 1996 ; Quah, 1996). A rather third position belongs to authors like Galor (1996) : convergence might be real in practice, but for countries that prove some similarities '*ab initio*' – or, this is what there has already been called above the *conditioned* convergence, but also might be called 'multi-polar' convergence.

2.4.2 The Balassa-Samuelson effect

This is a controversy face to the convergence issue made by a theory actually shared by a longer series of authors[7]. The *Balassa-Samuelson effect* predicts that *countries experiencing productivity increases would meet price increases* meanwhile (Frankel 1999, p. 14). The purchasing power parity (PPP) proves productivity-based and this effect is double-based: first, the so-called *"Penn-effect"* sees the (same) goods' price higher in the richer, than in poorer countries; second, the so-called *"Balassa–Samuelson hypothesis*" sees all economies producing both tradable and non-tradable goods and the productivity level and rates stay more variable for tradable zone all over. In such an order, immediate causes of this effect do easily multiply: variation of productivity among countries for both tradable and non-tradable sectors; variation of differences in the same productivity between tradable and non-tradable goods within the same country; persistence and weight of the non-tradable sector in the home economy; the direct productivity-incomes correlation; even high transportation costs wherever the good is cheaper. The "Penn-effect" finalized sees the PPP deviations as: *the higher the income, the higher the price level* (David, 1972; Officer, 1976)*.

2.4.3 Specific developments in the European Union

The EU appeared aware of the above described realities from the very beginning – that was why its basic Treaties did and do associate convergence with *cohesion* (Myrdal, 1957). The attractiveness of the area has also presumed as associated to the pressure on labour resources, especially the one from less developed areas. The Maästricht Treaty and moment (1992) took a new and advanced step onto deepening cohesion in a context linked to convergence and growth-sustained development (Iancu, 2005, pp. 12-13).

Despite these facts, Iancu (2005, pp. 22-23) concludes some contradictory situation regarding the same issues here above debated. The per capita GDP proves rather divergent (i.e. rising σ coefficient) within EU15 during the 1995-2005 interval. On the contrary, a slight convergence trend was proven by EU25 between 2004 and 2005 around EU10. However, the EU25 and EU15 groups display significantly different variation coefficients from each-other.

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[7] See the Ricardo–Viner–Harrod–Balassa–Samuelson–Penn–Bhagwati effect (Kravis & Lipsey, 1983; Samuelson, 1994, p. 201).

Finally, all three mentioned groups of the EU member countries play on distinct numbers the way that the highest trend to convergence belongs to the less developed countries[8].

3. The Optimum Currency Area (OCA) theory in the literature

In 2002 the OCA theory had its own 40th anniversary, for a period during which four phases were claimed to have succeeded and marked this subject: 1/ ‚*pioneering'* phase – with the basic OCA theory and properties revealed; 2/ ‚*reconciliation'* phase -- combining diverse facets of the theory; 3/ ‚*reassessment'* phase -- that leads to the ‚new OCA theory'; 4/ ‚*empirical'* phase – in which the theory was subject to due empirical scrutiny (Mongelli, 2002, p.4).

3.1 The "pioneering" phase[9].

Developed between 1960s and early 1970s. Actually, debate started and the OCA properties were drawn on appropriate issues -- mobility of factors of production within the area, price and wage flexibility, economic openess, diversifyed production and consumption, similarity in inflation rates, fiscal and political integration, financial integration. The similarity of shocks and income correlation „were added later" (Mongelli, 2002, pp.4 and 8-11). This first phase of the OCA theory developing was started by Mundell (1961) – who is recognised as the parent of the concept --, then McKinnon (1963), Kenen (1969), and Ingram (1969) joint the debate not much later on, whilst Freedman (1953) and Meade (1957) had expressed even earlier than Mundell and the others, the previous on a principial price flexibility and the latter about the balance of payments of the region in way to become the later EU.

3.1.1 Basic definition of OCA

Once more, Mundell drawn the common OCA definition:

(i) a ‘*domain within which the exchange rates are fixed'* (Mundell, 1961, p. 657);
(ii) the region (not the nation) with a high degree of internal production factors mobility (i.e. capital and labour), versus external immobility (Mundell, 1961, p. 661);
(iii) finally, Mundell sees a world of ‘*currency regions'*, rather than nations with their own monies.

In reality, the first and third components of the Mundell's definition of OCA relate to money and currencies, so OCA, on the one hand, retorts the older theory of *international monetary systems* (IMS/Triffin, 1973) and on the other will come to be completed by McKinnon (1993a) – actually by the lasts' theory of the *nominal anchor*. This is the order in which Mongelli (2002, p.8) notices the concomitance of this phase with either the IMS shaping in the Bretton Woods Agreement (1944)'s way and process, with its specific *capital controll*, or the beginning (incipience) of the European integration. In other words, the OCA theory came up directly into the *debate about fixed, versus flexible exchange rates.*

Pelkmans (2003) believes that the (above) OCA's definition might actually be simplyfied or adjusted as: ‚the region in / for which the cost of giving up floating exchange rates– i.e. the alignment of the national currencies' rates within the region -- is overwhelmed by benefits of the unique-common currency in use'.The second component of the OCA's definition prolongs

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[8] Here including Romania. Despite that the author has a not too optimistic conclusion, i.e. for a presumed 4% a year growth for this country, as against 1.8% a year growth for EU25, a common per capita GDP level will get as high as EUR 63,200 in about 57 years from the moment of this study (Iancu. 2005, pp. 18-21).
[9] Mongelli (2002, pp. 4 and 8-11).

the above one related to the intra-region currency-exchange rate regime, but then more aspects here attach to these two.

3.1.2 Properties of OCA

(1) Mobility of factors. Mundell (1961) was ending his analysis by reiterating for OCA the picture of the 'region with perfect (production) factors' mobility'. As for this component, *mobility of factors of production* counteracts price variability (see the next sub-paragraph) *within the region* (Mundell, 1961). Labour could be less mobile on the short periods, but the aspect might change in the long run (Corden, 1972).

Kenen (1969) notices that the Mundell's ‚region' is portrayed as neither geographical, nor political, and for the ‚factors' mobility', Mundell had insisted more on labour, than on capital (Ingram, 1969). And this labour *mobility* needs a prior *employment* mobility and labour *homogeneity* in a formula that rather conducts to mono-industrial type regions. Grubel (1970) explains that the Mundell's description reclaims ‚*perfect internal* labour *mobility*, versus *perfect external* labour *imobility'*, whereas in reality it is to debate about a real graduality (different levels) of labour mobility. Giersch (1973) here wonders, in context, about whether an irreversible by definition process that *migration* is would be able to imbalance the external equilibria on the long term. Corden (1972) here answers that mobility of labour might prove a rather lower capacity of fighting *asymetrical shocks*.

(2) Price flexibility. As continuing the introductory idea of the precedent sub-paragraph, when flexible prices and wages – says the „last neoclassic" that Milton Friedman was, as together with all his ‚classics' and neoclassic predecessors -- it is less likely for unemployment in one country and inflation in another, plus exchange rate adjustments between (Friedman, 1953).

(3) Financial market integration. And since the incomplete Mundell's discourse about factors' mobility, Ingram (1973) argues that this part of integration cannot substitute the capital's mobility, but just smoothen it – i.e. fighting its shock aspects. In other words, *financial market integration* cushions temporary adverse disturbances through capital inflows. Later on, McKinnon (2001) reinforces the role of financial integration, in context.

(4) Degree of economic openess. McKinnon (1963) says that the more open the economy, the easier the *transmission mechanism* of exchange rate mobility into prices' and wages' movements; plus similarity between economic activity structures.

(5) Diversification in production and consumption. According to Kenen (1969), this OCA item also smoothens the exchange rate changes shocks; the same for impacts of individual sectors' mutations, and for settling ‚jobs portfolios' within the region.

(6) Similarities of inflation rates. Fleming (1971) observes that inflation might be caused by diverse disequilibria of sectors, their developments, policies promoted etc.[10] Similarity in inflation rates equally might reduce inter-country shocks and their impacts. Eichengreen (1990) indicates the need for narrowing fluctuations between countries and the ‚*Balassa-Samuelson' effect*[11] could allow the ‚catching-up' part of integration processes.

(7) Fiscal integration. This aspect is for the *union of countries* to be able to redistribute resources among -- i.e. to countries that need them, when the case, in order to free the exchange rate from such a task, once more (Kenen, 1969).

(8) Political integration. This is, finally, the will of the countries involved to join commitments, to share costs of processes amongst and to encourage institutional linkages and cooperation on some activities etc. (Mintz 1970). Synthetically, these above properties would

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[10] See the 'Mundell-Fleming model'.
[11] See also the above 2.4.2.

make the money exchange rate less adjustable (usable) within the region to adjust (temper) presumable shocks(Mongelli, 2002, p.5).

3.1.3 Criticism on the ‚pioneering' phase
Mongelli (2002, pp.5; 11) indicates what the author calls the ‚pioneering phase's drawbacks', meaning there were not yet for OCA: (i) a ‚comprehensive framework' defined, so some properties were yet contredicting one-another; (ii) an empirical content for most of its properties. There also were for Robson (1987) difficulties for measuring properties; ambiguity of characteristics and of differences amongst. As for Tavlas (1994), „OCA points to different directions", meaning a ‚problem of inconclussiveness' – e.g. small economies are more likely to be open, but less capable of production diversification, so more likely to accept the unique currency, but with more propensity to flexible (than to stable) exchange rates. McKinnon (1993b) here adds that more differenciated economies have less foreign trade. Then, how can the OCA above requirements be ranked amongst ?

3.2 The ”reconciliation” phase
That was during the 1970s. There were both a deepening of some properties (i.e. ‚meta-properties') of OCA and an adding of more ones (i.e. *similarity* of shocks/ Mongelli, 2002, p. 5). There is to be understood for this phase the above ‚pioneering' points of view reuniting, but equally what a presumable OCA brings for countries joining it. Concretely, McKinnon (1963) was viewing that country A might be supposed as interested in a currency union with a price and cost stable country B, in order to ensure its own stability, but some shocks are always expected. Or, this is the same with Ishyama (1975), for whom OCA is limited by the interest of each country to join or stay out of the union, and Corden (1972), who imagines joining a currency union by any presumable country as basing on a prior *cost-benefit analysis*. And actually, the exchange rate flexibility would be in place on both alternatives, together with the one of prices and wages -- the exchange rate would be able to insulate a country from asymetric shocks in any way; the question which remains is whether that would be outside or inside the union.

And as for the *cost-benefit analysis* of the monetary integration of individual countries, see the rectangular graph in Figure 1.

Figure 1 -- Costs & benefits
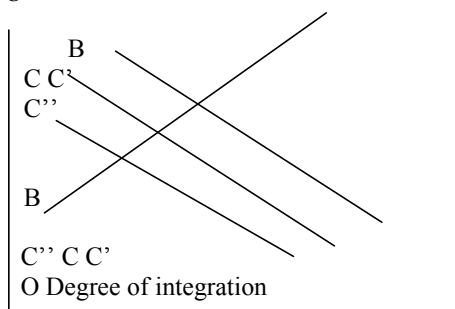
Source: Artis (2002, p.16)

This is illustrated by Artis (2002, p.16) for ‚*a country facing option of joining with a partner or group of countries in a currency union'* (Artis, 2002, p. 2). *Benefits* here mean loss of: (i) transaction costs and (ii) currency risk – the (B) curve is upward sloaping: the higher

the economic integration degree, the higher the benefits from the monetary integration. *Costs*, as correspondingly, mean: (i) loss of the country's (independent) monetary policy; (ii) loss of the shock absorbing of exchange rate movements. – the (C) curve is downward sloaping: both monetary and exchange rate policies decline, as values, in the open and interacted economies of such an area.

There are three cost curves (C, C' and C''), of which's meaning gets related to different economists' view on approaching integration – see also the corresponding intersectional points. The intersectional costs-benefits points express economic states in which a country starts taking advantages of joining a currency area.

In such an order, it is the *monetarist* view (C'') – for which integration costs are assumed to be low and even a reduced integration degree is enough for attending the crossed cost-benefit point of joining integration; versus the *Keynesian* view (C') – for a significantly higher cost level of assuming integration. Cerna (2006) has, in this context, a two columns list of possible costs-benefits of OCA. And apart from these, two ways of efficiency increase in the OCA context are outcoming from this view: (1) rising the economic integration (i.e. convergence) degree between countries in the area; (2) reducing rigidity of the integration costs – i.e. flexible production factors' movement around.

Despite all these above developments, this new ,reconciliation' phase proves the same drawback as its previous ,pioneering' one: still no empirical content (Mongelli, 2002, p. 5).

3.3 The "reassessment" phase

Then, in early 1980s, there came a kind of ,stagnation' for the OCA theory's developments or a *,lost momentum'* in the aftermath of the second phase. Despite that, then there were: (a) some advancing on empirical approaches; (b) conceptually reconsidering the monetary (currency) union; (c) reinterpretations of some properties, as previously formulated – and this was the *,reassessment'* phase: between 1980s and early 1990s (Mongelli, 2002, p. 5). Not to be equally here ommitted for the late 1980s, parallel preocupations for building the EMU on the ,*one market-one money'* principle, that did push approaches through the ,new OCA theory'. Or, „the. EMU question is, possibly, more complex than the OCA question" (Mongelli, 2002, p. 14). Tavlas (1993) remarks that the ,new' OCA theory here started emerging *vis-à-vis* the ,old' OCA theory after revisions had been made (see also Tavlas 1993).

Then, see *empirical studies* that did start in context since the 1980s: low wage flexibility behind low price flexibility (Calmfors & Driffil, 1988); real wages are still low flexibility accross European countries and employment do some adjustment to wage flexibility (OECD, 1994); some significant asymetries of the European labour markets (Cadiou, Guichard and Maurel, 2001); the relationship between centralization of wage bargaining and labour market outcome is not linear – countries with differences in labour market institutions make find it costly to form a monetary union (DeGrauwe, 2000). Besides, it is for this phase that Alesina, Barro, Tenreyro (2002) conclude that countries with large co-movements of outputs and prices have lost costs from abandoning monetary independence *vis-à-vis* their partners, but Calvo & Reinhart (2002) appreciate the lost of monetary independence as ,not a substantial cost'. Last, but not least, Emerson and al (1992) argue that in the long run, high inflation does not yield any macroeconomic benefit in terms of growtht and unemployment.

3.4 The "empirical" phase

This final phase started in 1987, as complex approaches and analyses (Mongelli, 2002, p. 5), of which's sizes overpassed the previous similar studdies drawn in early 1980s. Issues that came one by one under study in this time interval were: price and wage flexibility (Mongelli,

2002, p. 18), labour market integration (Mongelli, 2002, p. 19)[12], factors market integration (i.e. foreign direct investments/ Mongelli, 2002, p. 20), financial market integration (Mongelli, 2002, pp. 20-21), the degree of economic openess (Mongelli, 2002, p. 21), diversification in production and consumption (Mongelli, 2002, p. 21-22), similarities in inflation rates (Mongelli, 2002, p. 22), fiscal integration (Mongelli, 2002, p. 22-23) and political integration (Mongelli, 2002, p. 23-25).

The general critical remark that can be made on this final and intellectually productive phase is that all these studdies look backwards by definition (Mongelli, 2002, p. 26), whereas the opposite *'looking ahead'* stays a more delicate issue – it is supposed to answer some questions raised. The one is the *question-paradigm* between the old and classic *country specialisation* in the inter-member countries' trade contest and *endogeneity of OCA,* that is the real integration (Mongelli, 2002, pp. 27-31).

As for the previous (*country specialisation*), the *'Krugman specilisation hypothesis'* (Krugman, 1993, with the so called „lesson of Messachussets") relates to a US development-experience over the last century: the single currency removes barriers of increasing returns to scale and even in integration fostering conditions the comparative advantage will work as classically and countries will specialize (see also Rauch, 1994; Eichengreen and Bayoumi, 1996; Bertola, 1993). But so member countries of a currency area will reduce production diversification and become vulnerable to asymetric shocks. Frankel (1999) so opinates that the solution will be enlarging the OCA's area – i.e. the *Frankel's paradox*. Otherwise, the former OCA will turn into a small group of countries with proper currencies floating among each other: , the OCA's dissolution' (Mongelli, 2002, p. 28). Finally, on the one hand, the European integration is a process of evidence, but on the other specialisation among the EU member countries plays its (other) role: destruct(ur)ing production diversity, as required by OCA (Mongelli, 2002, p. 32).

As for the latter(*endogeneity of OCA*), a preliminary answer comes from Frankel (1999) as well: member States will be more attracted by sharing a common currency when the trade-off and/or corelation between *incomes* and *economic openess* towards the(other) member States. The question whether income correlation rises or falls following the monetary integration doesn't make unanimous answer (Mongelli, 2002, pp. 27-28). In which conditions, Frankel (2004) also adds that *'OCA varies over time'*.

The hypothesis of positive correlation between income and inter-member cuntries trade rising consists in that increasing integration would so be assumed to lower transaction costs and eliminate currency risks. McCallum (1995) specifies that the common currency is supposed to be a „serious commitment"; no competitive devaluations, incentive for FDI and future political integration encouraged.

But *what does the empirical evidence tell us.?* Eighengreen (1996) and EU Commission (1999) conclude on results like: (i) increasing specialisation and (ii) lowering industrial concentration for both Europe and US. Another important response comes from Rose (2000): countries trade on the same currency (with other countries) three times more than with countries with other currencies[13].

The other relevant *question-paradigm* of the last and current phase is: „do countries form currency unions because they tread a lot, or start trading more because they form a currency union ?" Or, do the two position reconcile ? (Mongelli, 2002, pp.6; 31).

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[12] Here to be exemplified about labour market integration in Europe Eighengreen (1990) concluding that variation of unemployment was twice in Europe than in the US. and Thomas (1993) for different responses in Europe and US of the unemployment rate to unemployment shocks.
[13] 186 countries were taken in this model.

3.5 Concluding remarks

Mongelli (2002, p. 31-32) found as the appropriate question raised for the 40th aniversary of the OCA theory that: „was that made simpler ?" And the author answers „yes and no". For the „better position': studdies are much deeper and OCA can be viewed in many more positions and situations. For the opposite „harder position': it is still hard to reconcile all the OCA's properties and to assess the agents' reactions.

4. Concluding for convergence and OCA

Just let us suppose the impossible alternative in which both convergence and OCA debates wouldn't limit to regions, as *multi-country-regions* defined as above. Then, what would our approach become? The answer is simple: (a) the debate on *convergence* would go back to its primary neoclassical approach of growth-development, with its double aspect, (i) trend towards self-balancing and (ii) '*catching-up*' developed economies by the less developed ones in the international context; (b) the debate on *OCA* would search for inter-country trade and all the other flows equilibrium able to fight real and even presumable asymmetric shocks.

So, actually, such an extremely simplifying hypothesis is enough for re-positioning research onto basic *growth-development* and general *equilibrium*. Also note that the two concepts keep in common issues like: equilibrium growth, international economics, symmetry-asymmetry of shocks, common currencies – i.e. common value references for the common market --, but equally regionalization, as areas-zones for OCA and countries 'clubs' for convergence (Table 3). Despite these, the two defined concepts on the advanced integration are obviously distinct from one-another.

Last, but not least, recall that the *convergence-OCA* couple of concepts look different issue than the *free trade area-customs union* corresponding association. The last were just phases of an earlier moment of the integration and the relation between is defined clearly and simply by specific differences. Convergence and OCA stay different from free trade area and customs union meaning a paradox of more knowledge of the past for what was developing at that time, than it currently is the case of an *advanced integration* on which theoretical debate sees itself forced to recall primary economic theories and analyses and/or to adapt them to a reality that is just Europe.

Table 3 -- Key issues related to both convergence and optimum currency area (OCA)

N.	Concept	Convergence	Optimum Currency Area (Oca)	Observations
1	*Asymmetrical shocks*	Convergence is just embarrassed through.	They are the opposite of the OCA's aiming.	x
2	*Balassa-Samuelson effect'*	This is a challenge for all convergence idea: prices (i.e. the inflation rate) go higher in more developed economies.	As all challenge for conversion, it is the same for OCA and potential shocks.	x
3	*Capital*	This is a factor of production for economic development, but the financial integration is even more obviously significant for convergence.	The financial integration (see 15 below) is equally important for what OCA priory sees for capital: its mobility throughout the region.	x
4	*'Catching-up'*	This is deeply proper to convergence, despite that so growth rates show fully different between developed and developing economies in the	This might be a source of some shocks sometimes.	Solow(1956) and see also the types convergence.

		region.		
5	*"Common language(s); colonial history; remaining political links".*	This is a kind of 'classical' factors for economic convergence nowadays, in the post-colonial era.	OCA stays always close to convergence and integration factors.	Glick & Rose (2001).
6	*Cost-benefit analysis*	Rather no mention to make.	Benefits of (staying in) the OCA have to overpass corresponding costs.	Cerna (2006)
7	*Country specialization*	Rather non specific for convergence (although never being excluded), but proper to the classical-neoclassical theory of international trade.	Not specific to OCA either.	Krugman (1993), with the so called „lesson of Massachusetts for the EU"
8	*Criteria*	They are nominal (see monetary) and real (as referred to the real economy). The previous are pointed by the 'Treaty of Union' (Maästricht 1992), whereas the last seem to be conveyed to the academic approaches. Actually, they refer to some macroeconomic indicators, but of which, of course, behaviour displayed is different from one-another.	The convergence criteria belong to convergence, by excellence, whereas OCA sees them as belonging to the integration concept itself. Convergence itself is one of the OCA's requirements.	x
9	*Diversification in production and consumption*	This is proper to development and building well developed economies.	This is for OCA, as against potential shocks, but the alternative of country specialization stays under the same debate for a similar support to common currencies.	Kenen (1969)
10	*Economic equilibrium*	This is a convergence trend, as compulsory, in which the 'steady-state' is expected for each economy in part; what happens between different economies then is expected to come.	OCA is assumed as an equilibrium area (region) of all: prices, including exchange rates and costs, the last including wages, then production factors equally with their prices, but besides with their space mobility etc.	x
11	*Economic openness*	No convergence without economic openness.	The same as for convergence.	McKinnon (1963)
12	*Economic structure*	This is finally expressed by weight of activity sectors in GDP (or rather GNP, when integration) and stays important for the economic convergence in the sense that markets of different countries so may be not only similar, but also united amongst, as one common (unique) market with the same business cycle timing and similar consequences on employment, welfare and cohesion in the area and, finally, on integration present and perspectives.	Similarity of economic stru-ctures of member States in the region is just one of alternati-ves for the common unique market viability -- the alterna-tive might be a countries' spe-cialization, as in the classic theory of international trade (see also the country speciali-zation). However, the previous similarity of structures seems more appropriate to avoiding asymmetric shocks and so to OCA; to welfare and corre-spondding cohesion, as well.	Dinga (2008) wonders 'what kind of economic structure?'. Krugman (1993) offers the country specialization alternative to the unique market and common currency.

13	*Exchange rates*	They are assumed as fixed, or at least stable, as much as the floating ones imply insulating individual economies from the others.	It is the same as for convergence; moreover, the fixed exchange rates hide the potential or virtual common currency, as operational.	See the European Monetary System (EMS/1979-1999).
14	*Factors of production*	Their problem is double: (i) supporting growth-development of each nation; (ii) availability to all nations.	They imply specific mobility in the region, as either beneficial, or supportive for shocks.	x
15	*Financial market integration*	This is favourable for the capital involvement in both development and integration.	The financial integration is equally important for what OCA priory sees for capital: its mobility throughout the region.	x
16	*Fiscal integration*	This is a good help for convergence, even when disparities of development in the region.	As linked to the factors' mobility and disposability throughout the region.	x
17	*Growth & development*	Convergence might be seen as a growth-development theory adapted to new realities.	The economic development level is among the strongest stability factors in a multi-State region.	x
18	*Inflation rate*	This is a good reflection of convergence achieved any time. As opposed, there are many factors of the inflation rate's similarity erosion at the same.	This is a basic factor for OCA achieved, as well.	Fleming (1971); Eichengreen (1990); Balassa-Samuelson effect.
19	*Integration (degrees)*	Convergence equals integration, as seen from OCA.	OCA is high degree integration, as by definition.	Artis (2002)
20	*Labour*	This directly-indirectly relates to the open economy.	A labour market in the region is obviously required.	Mundell (1061); Corden (1972)
21	*Nominal anchor*	Both convergence and OCA relate to a unique basic value for the modern market development.	Moreover than for convergence, this basic value is a national currency that becomes internationally freely usable currency (i.e. in the OCA region), except for the *common currency* adopted formula.	McKinnon (1993a)
22	*,One market-one money' principle*	See above for the nominal anchor.	See above for the nominal anchor.	x
23	*"Penn-effect"*	See the 'Balassa-Samuelson' effect.	The same as above.	*the higher the income, the higher the price level* (David, 1972; Officer, 1976).
24	*Political integration*	No integration against the people's will.	Only in theory (i.e. the theory of international trade) and partly in incipient phases of integration (e.g. free trade area & customs union) the indifference about with whom (which other nation) to integrate is considered.	Mintz (1970)

25	*Productivity*	The productivity level defines the level of economic development and welfare reached by any economy.	The productivity problems presumably 'hide' behind all economic shocks between nations.	x
26	*Quantifying*	This is needed wherever several economies compete on the same 'qualitative' basis.	Finally, shocks express in quantitative terms.	x
27	*Structural similarity*	It expresses like weight of sectors in GDP etc., but there is still controversy in the topic area from different stand-points.	OCA is more exact in its economic similarity requirement -- i.e. when defined as such, asymmetrical shocks would be better avoided, but an alternative of specialized countries and sub-regions around might equally be valid for supporting common (regional) currencies (see Krugman/"Lesson of Massachusetts").	α type convergence (Iancu, 2005; Dinga, 2008) and the "Lesson of Massachusetts " (Krugman, 1993)

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ECONOMIC CRISIS AND SMES' BEHAVIOR: AN ANALYSIS ON THE FURNITURE SECTOR IN ITALY

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Abstract

This paper examines the results of a case study analysis carried out on five small and medium-sized enterprises (SMEs) operating in the furnishing sector of an Italian province. The aim of the study was to analyze which kind of strategies SMEs are adopting in order to face the economic crisis started in 2008. The cases analyzed highlighted the ability of firms in reacting by the development a proactive strategy, which brought them to positive economic results over time. Discussion of results and managerial implications are suggested in order to properly address other enterprises acting in similar market condition.

Keywords: strategy, economic crisis, SMEs, firm's performance.

1. Crisis, SMEs and strategic behavior

Literature on business strategy reveal a complex scenario of strategic behaviors taken by small and medium-sized enterprises (SMEs) in a period of crisis. Both defensive and development strategies mainly emerge (Hodorogel, 2009): the first are characterized by low investments and objectives of maintaining the position in the market. Development strategies aim at improving the competitive position of the firm over the middle-long term (Pencarelli et Al., 2009, 2010; Madrid-Guijarro et Al., 2013).

A number of research (Deans et Al., 2009; Kitching et Al., 2009; Madrid-Guijarro et Al., 2013) show the importance of developing a proactive behavior characterized by the continuous discovering and pursuit of new market opportunities. This behavior is based on the anticipation of environmental phenomena and rapid responses to market opportunities, including those the crisis may point out (Miles and Snow, 1978; Srinivasan et Al., 2005; Antonioli et Al., 2011; Colombo and Quas, 2010; Naidoo, 2010; Wilson and Eilertsen, 2010; Kunc and Bhandari, 2011; Vargo and Seville, 2011; Hong et Al., 2012; Bourletidis, 2013; Civi, 2013; Makkonen et Al., 2013).

Facing an economic crisis, among the factors that make small firms more vulnerable compared to bigger ones, are:

1) Lack of financial and professional resources. The financial issue becomes particularly influent in a period of crisis, and it increases even more because of the difficulties that small enterprises tend to encounter when trying to access credit (Lawless and Warren, 2005; Chen and Li, 2010; Franco and Haase, 2010; Caruana et Al., 2011; Carbo-Valverde et Al., 2013; Kremp and Sevestre, 2013; Pal et Al., 2014). In addition, even the human resources problem must be taken into account, due to the lack of professional competencies for the adoption of managerial methodologies and formal planning models, especially in critical areas such as marketing (Beck et Al. 2005; Hin et Al., 2013).

2) The small size of the target markets, as regard to both the final customers and trade intermediaries. This reduces the possibility of exploiting economies of scale, and make the market very concentrated on the demand side, so that SMEs often rely on a small number of customers (Papaoikonomou et Al., 2012; Hin et Al., 2013).

3) A wide adoption of a strategic orientation based on less systematic and structured approaches than those of bigger enterprises (Musso and Francioni, 2014). This often involves the adoption of short-term strategic choices, inspired by a spontaneous and instinctive behavior of the entrepreneur (Carson et Al. , 1995).

On the other side, some advantages of SMEs compared to bigger enterprises can be highlighted. A wide Literature shows that small enterprises tend to take advantage from the ability to quickly adapt to market changes (Baker, 1995), and to offer differentiated and customized products according to customers' needs and requirements (Bhide, 1994). Moreover, due to the fact of acting in limited markets, SMEs also tend to limit at the geographical level their own supply network, so that logistics costs are reduced and deep and effective relationships with suppliers are created. Finally, several small enterprises have an accurate manufacturing tradition which emphasizes the product excellence and the care of details. This ensures the opportunity to exploit competitive advantages in those targets which are particularly attracted by supply quality and less concerned about the price (Hodorogel, 2009).

These advantages are particularly relevant in a period of crisis, when the need to reduce production costs can lead to price competition strategies which are very difficult to bear. Moreover, the presence of such advantages allows SMEs to compete on the basis of differentiation (Buehlmann, 2008).

Taking into account these advantages, a number of studies have underlined the importance for SMEs to adopt a proactive behavior, above all in time of economic uncertainties (Bourletidis, 2013; Civi, 2013; Makkonen et Al., 2013). Usually, international literature links the concept of proactivity to that of "entrepreneurial orientation", of which proactivity represents an essential dimension (Covin e Slevin, 1989; Hughes e Morgan, 2007). According to the definition of strategy by Miles and Snow (1978), an enterprise can be defined proactive when it adopts strategies that entail frequent changes and rapid answers to the market's new opportunities. On the other hand, a reactive enterprise does not define a real strategy; it only reacts to the changes introduced by other companies in the market.

This work aims at analyzing the strategic behavior adopted by a group of Small and Medium-sized Enterprises (SMEs) of the Italian Pesaro-Urbino Province in order to face the economic crisis started in 2008.

Despite the advantages of a proactive behavior, scholars are still cautious about linking this attitude to positive economic performances of firms, and there is still poor empirical evidence on the subject (Majocchi and Zucchella, 2003). Starting from this assertion, the study was conducted in order to identify which conditions and behaviors SMEs can adopt in order to obtain positive economic results by adopting a proactive strategy.

In particular, the study wanted to go further into:
- innovation on government assets and strategies that SMEs can adopt in order to better pursue market opportunities (new products, new markets, relationships with customers, innovation in business organization, innovation in marketing, etc.);
- the existing links between innovation that has been introduced, economic performance (dynamics of profits and debts, etc.) and market performance (market share and competitive position).

2. The research on an Italian province: Methodology

The analysis has been conducted in 2013 on five cases of firms located in Central Italy, in the province of Pesaro and Urbino. The firms analyzed are operating in a BtoC context within the furniture industry (bookcases, bedrooms, living rooms, sofas and kitchens). They are family businesses characterized by the crucial role of the entrepreneur in the decision process, and by a very "unitary and monolithic" ownership hold by a single individual or a family (Guatri and Vicari, 1994). They are also characterized by a strong manufacturing tradition inspired by the *made in Italy* values (Fortis, 2005; Di Maria and Micelli, 2008; Rossi and Martini, 2010), which are:
- production located in the home country;
- handicraft tradition which guarantees high levels of customization, going beyond the criteria of standard products;
- high quality of raw materials and components;
- respect of the European hygienic/safety norms;
- strong awareness of the brand *Made In*, which allows to promote Italian products in foreign markets, pushing on values that foreign customers usually associate with the label "*Made in Italy*" (aesthetics, beauty, luxury, wellbeing, passion, style and qualitative excellence);
- capability of gaining global leadership in niche markets (Zucchella and Scabini, 2007);

In line with the objectives of the study, firms have been selected – with the support of industry associations and the Chamber of Commerce of Pesaro-Urbino – among those companies which demonstrated a particularly dynamic behavior since the beginning of the crisis within a six years period (2007-2012). In the period considered, even data referred to the year before the beginning of crisis have been analyzed (the crisis began in autumn 2008, therefore 2007 data were included in the analysis). Both the strategic choices made by firms, and the reorganizational processes implemented to face the crisis have been considered.

In-depth interviews to the entrepreneur or the CEO have been carried out after having completed an analysis of the firm's economic and financial figures, and management, organizational and market indicators on the previous five years.

A very articulated situation emerged from the analysis. Different strategic approaches have been identified, which can be grouped into four strategic areas:
- product and/or service innovation;
- changes in target markets, especially with regards to internationalization processes;

- marketing innovation;
- innovation in the organization/management of production and supply chain relationships.

The analysis of such processes and activities has been developed by considering the main enhancing factors for generating positive economic results, and also detecting the hindering factors. The objective was to identify managerial implications that could help SMEs to face the economic crisis and better identify market opportunities.

3. Results and discussion

Despite the small number of cases, two important elements can be pointed out from the empirical research.

Firstly, the SMEs analyzed have maintained positive performances over the six years considered (from 2007 to 2012), which entirely cover the current economic crisis. As shown in Figure 1, the analyzed firms maintained stable their turnover, increasing it in three cases. 2009 was the worst year for all of the enterprises, particularly for one of them, which registered a decrease in sales of almost 60% compared to the pre-crisis period (2007). Afterwards, while 2010 and 2011 have been years of economic recover, in 2012 a new period of widespread decline occurred: during this year, only three firms involved in the study recorded a higher turnover compared to that of 2007. However, one enterprise doubled the value of turnover.

Figure 1 – Firms' turnover (2007-2012)*
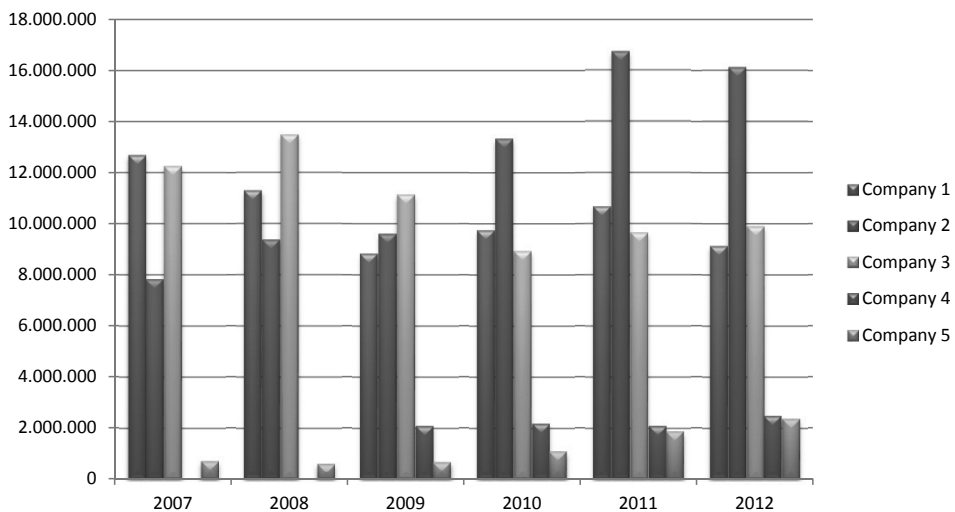
*Company 4 did not declare the amount of turnover for years 2007 and 2008

International markets seem to better support positive turnover trends, even in front of a detriment of domestic markets (Figure 2).

Figure 2 - Geographical composition of turnover
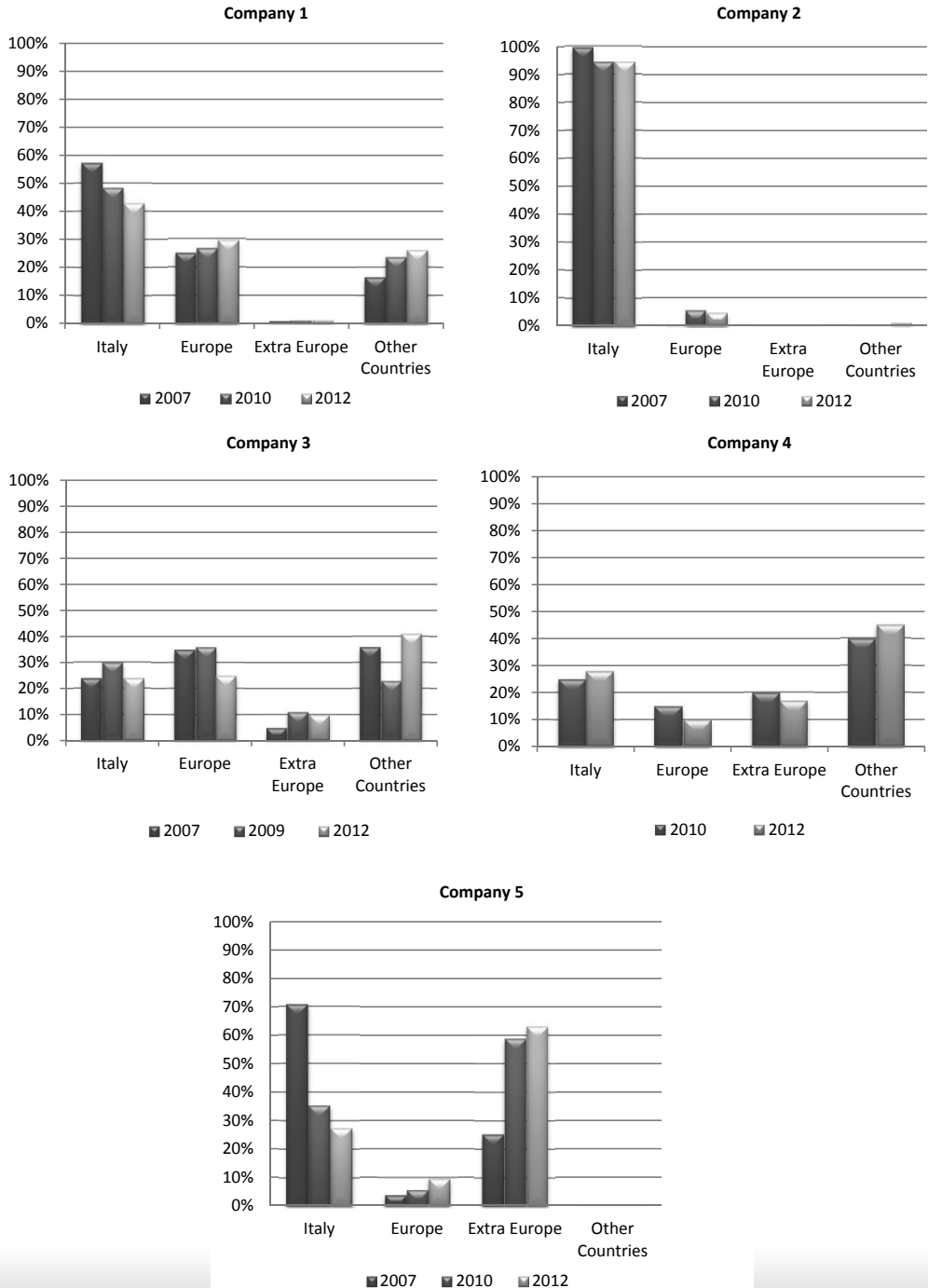
Good economic performances are generally associated with conditions of stability or improvement of the internal structural requirements: while the total number of employees has remained broadly unchanged, two enterprises have even doubled its number during the period 2007-2012 (see Figure 3).

Figure 3 – Total number of employees (2007-2012)
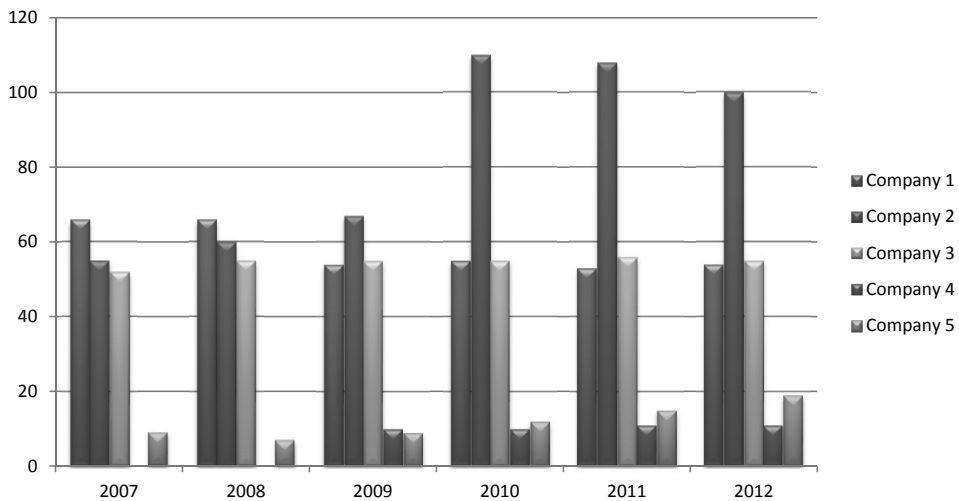
Another suggestion that emerges from the analysis concerns the variety of strategic changes introduced by SMEs. Those changes can be grouped into four main strategic areas:
-   product and/or service innovation;
-   changes in target markets, especially with regards to internationalization processes;
-   marketing innovation;
-   innovation in the organization/management of production and supply chain relationships.

Product and/or services innovation
All the cases analyzed showed great efforts into products innovation. The amount of investments in R&D has mostly remained unchanged over the six years considered and no radical innovations have been introduced. Nevertheless, a clear commitment to an ongoing improvement of products can be observed: firms are continuously looking for new models, materials or designs in order to meet the emerging needs of their demand.

One of the observed enterprises developed completely new product lines as a replacement for the more obsolete and structurally unsuited ones. Designers of the highest fame have been involved in the process. The approach to innovation was generally market oriented. It is demand driven and aimed at developing customized products, sometimes designed together with national or foreign partners.

In several cases, product innovation goes along with the discovering of new markets opportunities.

Changes in target markets, especially with regards to internationalization processes

Market innovation moves towards the research of new targets. Sometimes, firms enriched their product offer with customizable elements in order to satisfy new targets and face the decreasing demand of traditional markets, due to the rapid evolution of customers' needs.

The economic crisis generated a polarization of the demand, characterized by the simultaneously request for both high-end and discrete products at low price. This encouraged two of the interviewed entrepreneurs to targeting both the segments of the market. Investments were made into two directions: firstly, to improve the aesthetic and emotional value of products in order to develop a high-quality offering, and secondly to the launch of new products characterized by more standardization and competitive prices (based on simple and mature technologies).

The exploration of new market opportunities also drove companies to devote increasing interest in internationalization strategies, just focusing on sales activities, without taking into account any other option as regard to entry modes. Indeed, delocalization strategies could be in antithesis with a differentiation strategy addressed to customers which appreciate the value of products and the "*country of origin*" effect. Russia, China and, secondly, South American Countries are of particular interest for the interviewed enterprises, which pursue different sales strategies for entering these markets. Strategies vary from the opening of showrooms to the development of collaborative agreements with local retailers[1].

However, it emerges that firms usually base their internationalization choices taking into account the value of the "*Made in Italy*" brand, which characterize their products.

Before entering a new market, indeed, an analysis of customers' needs is made in order to evaluate the capability of the market to better comprehend the distinctive features of the brand (design, originality, quality of raw materials etc.). This preliminary analysis allows firms to successfully enter those foreign markets where the *"Made in Italy"* reflects the consumers' tastes, styles and needs and where the quality is a determinant key factor for their choices. On the contrary, it could discourage the market development where the need of potential final customers are not in line with the characteristics of the "*Made in Italy*" brand. As regard to this point, usually firms have to face a strategic choice: dismissing the foreign market development or repositioning their brand. This last option was chosen by one of the interviewed enterprises, which decided to reposition its products by moving them towards the high-end market. The main characteristics that make them a *"Made in Italy"* product have been left unchanged during the repositioning process.

Marketing innovation

The third area of changes refers to marketing activities. The number of employees involved in marketing functions was quite limited within all the firms considered, and it remained unchanged over the period analyzed. However, the quite low percentage on turnover of marketing investments has increased, and in two cases it has even doubled its initial value.

The most significant innovation has involved the communication area, to which the higher amount of investments has been addressed. This is mainly due to the growing awareness of entrepreneurs about the strategic role the Web (which is considered fundamental for information, communication and also for the e-commerce) and to the changing perception of the role of trade fairs, which are no longer seen as a showcase to present new products, but as a direct sales channel. One of the interviewed enterprises has even engaged an external agency in order to improve its communication activities and to ensure complete coherence among all of its initiatives.

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[1] For further information on the SMEs targeting and entering foreign markets strategies, see Musso and Francioni (2012)

Moreover, firms increased investing in press releases, writing articles for family targeted magazines, and also investing in public relationships. The traditional catalogue has not been abandoned. It is still considered a very important mean of communication and a sales tool, especially by one of the interviewed enterprises, which invested a relevant amount of resources to create attractive and high-quality paper presentations.

One entrepreneur stated that, in the last five years, he changed the process of pricing construction, moving from a mark-up logic to a demand- based approach, which results from the esteem of the value as perceived by customers and the degree of the perceived substitutability of the product.

Finally, the analysis revealed an increasing awareness of entrepreneurs about the importance of marketing activities to face the turbulence and instability of the competitive environment. This awareness results in the increasing allocation of resources in the marketing area and also in the reinforcement of the marketing culture at every level of the organization.

Innovation in the organization/management of production and supply chain relationships
Significant changes have been made in the organization and management of production and supply relationships. The innovation carried out include programs of production reorganization which follow "*lean*" strategies, the outsourcing of non-core processes, the creation of strong connections with strategic suppliers, and lastly, the optimization of logistic flows through the use of computing tools which allow enterprises to obtain a reliable and real-time control of the production program, the stock and shipping of products.

With regards to suppliers, network rationalization strategies emerged in order to reinforce the relationships with strategic suppliers and to develop a greater opening towards alternative supply sources for non-critical raw materials.

As regards to products certification, two enterprises have dropped their past programs due to the high costs for their maintenance; however, their principles are still in use since they are now integrated in the business procedures.

All the afore-mentioned innovations have been introduced with the only aim of increasing the supply chain so that to improve the response capability and the delivery times to the market.

4. The conditions underlying the success of a proactive strategy: Final remarks and future research directions

In this research, the continuous exploration and exploitation of entrepreneurial opportunities (about product, process and market) by SMEs has been linked to the achievement of positive economic performances, despite a period of economic crisis. In all the cases analyzed, the evolution of turnover and employees from 2007 to 2012 shows a variable but yet stable and growing trend. This is a very important result for firms, especially in a period in which strategic changes had to be faced in a general condition of lack of financial resources.

The success of the firms seems to be enhanced by two different conditions which can be observed in the five cases we have analyzed:
  - the capability to strengthen an entrepreneurial approach based on knowledge,
  - the adoption of decision making processes driven by strategic awareness.

Companies operating in the *Made in Italy* sector naturally have a very high heritage of intangible resources linked to manufacturing traditions and to the availability of both cultural values and human, technical and creative skills developed over time.

Reinforcing an entrepreneurial approach based on knowledge means that SMEs aim at developing strategies which increase the added value of productions linked to intangible

assets, through continuous investments in product innovation. It also means developing solutions even more aligned with the specific needs of the market, which become possible thanks to a more careful monitoring of the final demand dynamics and its emerging requests. Moreover, it means pursuing a continuous upgrading of human capital, increasing the employment of qualified skills, better coming from the local territory and its culture.

A knowledge-based competitiveness of firms means to enrich the *know-how* SMEs can obtain by their network of relationships established with different actors at the local level (for manufacturing activities), and at the market level, including in both cases informal relationships. The communicative and relational abilities of entrepreneurs usually yield the construction of these networks.

Furthermore, the knowledge development requires a greater control of the value chain and in particular of the intra-channel relationships. It also requires a more structured and planned management of internationalization processes and a re-organization of productions aimed at exploiting local values which are full of cultural traditions. These traditions can increase the qualitative level of products and the finding of qualified human capital (Schilirò, 2011).

Therefore, as far as the cases taken into account are concerned, the first factor of success seems to rely on the ability of enterprises to give value to those typical elements which characterize the *Made in Italy* brand. This allows SMEs to avoid the common price competition mechanisms by exploiting their knowledge heritage based on competencies and intangible resources developed over time.

Strictly related to that, there is the need for SMEs to develop a conscious strategic behaviour in order to increase their ability to identify and pursue desirable goals and development paths. Strategic awareness improves the identification and implementation of growth paths so enhancing the exploitation of entrepreneurial ideas (Pencarelli et Al., 2009).

In one of the five cases analysed, for example, the entrepreneur intuitively perceived the negative trends of the national market without using sophisticated analysis techniques, and he decided to look out onto foreign markets. This represented an expression of an entrepreneurial marketing approach (Carson et Al., 1995; Guercini, 2005) which led the entrepreneur to invest in the development of new relationships, taking advantage of new foreign markets opportunities.

The research carried out does not give enough elements to measure the level of awareness of the interviewed entrepreneurs. Nevertheless, it highlights the increasing importance addressed to marketing activities which are considered even more essential to understand the ongoing trends of the market, to design products and drive the innovation process, and also to improve the final value proposition. So, as other studies have previously demonstrated (Pencarelli et Al, 2009), it is possible to state that strategic awareness passes through the recognition of the importance of marketing processes. In fact, these processes help the development of an *outward oriented* approach which enhances a more efficient choice of market opportunities and the identification of strategies aimed at developing what a SME can do better than competitors.

The central role of marketing processes in the development of an effective strategic behaviour has been widely recognize (Srinivasan et Al., 2002; Naidoo, 2010; Buehlmann et Al, 2011; Bourletidis, 2013). Our research offers further elements of supporting evidence, highlighting the attention entrepreneurs address towards marketing, and how they are willing to hire marketing specialists and to invest in the development of marketing processes.

Future research should focus on this last main point. The limited number of cases observed suggests a further stage of analysis with a wider panel of enterprises, including businesses operating in different sectors (with the purpose of analyzing possible differences

linked to this aspect), and countries. Moreover, the structural and organizational conditions which may determine the success of firms' strategies should be examined in depth.

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THE ECONOMIC IMPACT OF PRODUCTIVE SAFETY NET PROGRAM ON POVERTY: MICROECONOMETRICS ANALYSIS, TIGRAI NATIONAL REGIONAL STATE, ETHIOPIA

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Abstract

This paper aims at evaluating the impact of productive safety net program on poverty using primary data from randomly selected 600 households in central zone of Tigrai National Regional State, Ethiopia. Propensity Score Matching and Foster-Greer-Thorbecke were used to evaluate impact of the program and poverty, respectively. The paper revealed that the program has positive and significant effect on consumption, livestock holdings, and productive assets. Moreover, impact of the program on total consumption expenditure per adult equivalent was found to be positive and significant. Using total poverty line, poverty rate was lowest among program participants (30.33%) than non-participants (31.1%). Highest poverty rate was found among households headed by women (38.42%) while households headed by men (23.1%). The study also revealed that the program has positive and significant effect on poverty reduction and protecting productive assets. Finally, it was recommended that female headed program participants based programs should be provided to help boost their agricultural output and reduce endemic poverty.

1. Introduction

Recently, the global focus has been to given food security and poverty alleviation. This is being made in response to the increasing food insecurity and poverty in the world. The incidence of food insecurity and poverty is devastating particularly in the developing countries and in terms of food insecurity; 852 million people worldwide are still chronically underfed. In Africa, an estimated 200 million (27.4 percent) people are famished (Babatunde*et al*., 2007).

Eradicating extreme poverty and hunger is the first MDGs set by UN; this goal also has become the core development objective and agenda of the government of Ethiopia. The Plan for Accelerated and Sustained Development to End Poverty is Ethiopia's "guiding strategic framework". The key goal of PASDEP is to enable chronically food insecure households to

acquire sufficient assets and generate income to move out of food insecurity and improve their resilience to shocks. Similarly, the main focus of the government's agricultural development strategy is to ensure self-sufficiency in food production at household level (ERSFE, 2009).

Drought, environmental degradation, population pressure, limited access to services, shortage of farmland, lack of productive assets, low input and subsistence agricultural practices are the most prominent causes of food insecurity problems in rural areas of Ethiopia. Consequently, more than 38 percent of the rural households fall below the food poverty line and 15 percent of the rural population in Ethiopia reported that they experience a food gap of more than four months (MoARD, 2009).

Realizing the magnitude and severity of the food insecurity, and linked to the PASDEP, the government of Ethiopia launched a development strategy known as Productive Safety Net Program (PSNP) in 2005. The program is the largest social protection scheme in Africa outside of South Africa's social grants schemes. The PSNP delivers social transfers to chronically food insecure households, either through public work activities or as a direct support with three distinct objectives of smoothing food consumption, protecting household assets and building community assets (Devereux and Guenther, 2009). However, some studies conducted in Ethiopia were at early stage of the program (Gilligan *et al*, 2008). Moreover, some of these studies used qualitative analysis (Barnes, 2008 Devereux *et al*, 2006; & Rachel *et al*, 2006).

A survey regarding the impact of PSNP on poverty has not been yet evaluated, and remains untouched in the study areas. The Propensity Score Matching (PSM) and Foster-Greer-Thorbecke (FGT) were used to evaluate impact of theprogram and poverty, respectively.

1.2.   Objective of the Study
The overall objective of this study is to evaluate the impact of Productive Safety Net Program (PSNP) on poverty. More specifically;

- To examine the impact of Productive Safety Net Program on consumption
- To examine the differentiated effect of the program on men and women
- To assess the magnitude of depth, gap and severity of poverty differentials between program participants and non- participants.

2. Methodology
2.1. Data and Procedure
To attain the stated objectives, mainly primary data was used. The primary data collection methods employed included both the use of structured and semi-structured type, focus group discussions and field observations to get information in-depth. Secondary data was also used to supplement the primary data using that was collected from various sources. A three-stage sampling procedure was implemented. In the first stage, the study area was selected based on PSNP coverage. In the second stage, five woredas (Districts) were selected randomly and finally, samples of 600 representative households were drawn on probability proportional to sample size. About 365 (60.8 percent) program participants and 235 (39.3 percent) non-participants were selected randomly using a systematic random sampling procedure.

2.2. Method of data analysis

The collected data were subjected to both descriptive statistics and econometrics analysis such as Foster, Greer and Thorbecke (FGT) index and Propensity Score Matching (PSM) to measure poverty and impact of the Productive Safety Net Program (PSNP), respectively.

2.2.1. Impact Analysis

Choosing an appropriate model and analytical technique depends on the type of variable under consideration (Gebrehiwot, 2008). Here, the dependent variable of interest (program participation) is binary that takes a value of 1 and 0. Assessing the impact of any intervention requires making an inference about the outcomes that would have been observed for program participants had they not have participated. The appropriate evaluation of the impact of the program requires identifying the average treatment effect on the treated (ATT) defined as the difference in the outcome variables between the treated households and their counterfactual. Counterfactual refers to what would have happened to the outcome of program participants had they not have participated (Rosenbaum and Rubin, 1983; Becker, S., and Ichino, A. 2002 and Gilligan *et al.*, 2008). According to Rosenbaum and Rubin (1983), let Y^{PSNP} be the outcome of the PSNP participants and $Y^{non-PSNP}$ outcome of the non-participants. For each household, only Y^{PSNP} or $Y^{non-PSNP}$ is observed, which leads to a missing data problem. In estimating the propensity score, the dependent variable used was participation in the PSNP and let Di denotes the participation indicator equalling 1 with probability of π if the household is program participant and 0 with probability of $1-\pi$ otherwise. Let X_i denotes a vector of observed individual characteristics used as conditioning variables. Propensity Score Matching (PSM) technique was used which looks like as follow:

$$ATT_{PSM} = E_{P(X)}\{E(Y^{PSNP} | D = 1, P(X)) - E(Y^{non-PSNP} | D = 1, P(X))\} \quad [1]$$

The perception is that two individual households with the same probability of participation will show up in the participants and non-participants samples in equal proportions on the basis of propensity scores.

2.2.2. Poverty Analysis

The poverty situation of the program participants and non-participants was analyzed using the expenditure approach, the one developed by Foster, Greer, and Thorbecke (1984) known as FGT Index which is commonly applied for poverty analysis. A separate food and total poverty lines were developed for the study area using the Cost of Basic-Need approach (CBN) as proposed by Revallion and Bidani (1994). The three measures of poverty in the FGT index were employed of which the Head Count Index (P_0) which depicts number of population who are poor, Poverty Gap Index (P_1) which measures the extent to which individuals fall below the poverty line (the poverty gaps) as a proportion of the poverty line and Poverty Severity Index (P_2) that demonstrates not only the poverty gap but also the inequality among the poor (WBI, 2005). Let Z is the poverty line, Y_i is the actual expenditure (per adult equivalent) of individuals below the poverty line, n is number of people, q is the number of poor people normally those below the poverty threshold, α is poverty aversion parameter andis a value given (0, 1, or 2) to determine the degree to which the measure is sensitive to the degree of deprivation for theses below the poverty line and higher values of α shows greater weight is placed on the poorest section of the society. Then, the FGT or $P\alpha$ is given by:

$$P_\alpha \ (Z\ , Y\ ) \quad = \quad \frac{1}{n} \sum_{i=1}^{q} \left[\frac{Z\ -\ Y_i}{Z} \right]^{\alpha} \qquad\qquad [2]$$

Therefore, if the value of $\alpha = 0$, theFGT or the Pα becomes the Head Count Index (P$_0$), when $\alpha = 1$, Pα is the Poverty Gap Index (P$_1$) and $\alpha = 2$, Pα becomes the poverty severity index.

The Cost- of- Basic-Needs (CBN) approach was employed to estimate the poverty line for the 2010 collected data. Ravallion and Bidani (1994), and Dercon and Krishnan (1996, 2000) provided further information on the construction of the poverty line, including the details of the food basket and its sensitivity to different sources of data on prices used to value the food basket. Individual expenditures have historically been shown to be correlated with income level. The consumption expenditure approach was used to estimate the poverty line; accordingly, the food poverty line was 235 per month (2820 per year) per adult equivalent Ethiopian Birr. Once the food poverty line computed, the total poverty line was derived by taking the average food share of the first lower (first quartile) proportion of the population (WBI, 2005) which resulted in a total poverty line (TPL) of 330 per month (3960 per year) per adult equivalent Ethiopian Birr.

The most widely used poverty indices: the head count index (P$_0$), the aggregate poverty gap or poverty gap index (P$_1$) and poverty severity index (P$_2$) was employed. The head count index measures the share of the population whose consumption is below the poverty line (the share of the population that cannot afford to buy a basic basket of goods). The poverty gap index measures the extent of the poor (living below the poverty line) how far away from the poverty line and the poverty severity index measures not only the gap but also the inequality among the poor (a higher weight is placed on those households further away from the poverty line).

3.   Results and Discussion
3.1. Impact of the Productive Safety Net Program
The impact indicators used in this study were assets and consumption expenditure. Consumption is here measured as per adult equivalent, which is food consumption per-adult equivalent, non-food consumption and total consumption expenditure (food and non-food) per-adult equivalent.

3.1.1. Family size
Out of the total sample respondents, 69 percent of them were male headed households and the remaining 31 percent female headed households whose livelihoods are based on farming activities. About 82 percent of the sample respondents were illiterate while 18 percent of them were literate. Male-headed households participated more relative to the female-headed households in the study area. Out of the total male-headed household respondents, 65 percent were from the PSNP participants. Only 35 percent of the female-headed households were PSNP participants out of the total female-headed sample.

There was statistical significant (at 1 percent) mean percentage difference between male-headed and female-headed households in PSNP participation. This result was in line with the study done by Gilligan *et al.* (2008) whose findings on the PSNP indicated that participants in the public work were more likely to come from male-headed households with married head.Family size and program participation have positive relationship. On average, program participants (6) have a bit larger family size than the non-participants (5). The combined average family size for sample respondents was six persons per household. The mean

difference in family size between program participants and non-participants was statistically significant (at 5 percent). The result revealed that households with higher male adults were participating more in the program than those who have less male adults. Thus, the mean difference of male adults between program participants and non- participants was positive. Statistically, this was found to be significant at less than 1 percent level of significance.

3.1.2. Age of the household
The mean age of the sample household heads was found to be 49 years. The mean age of program participants and non- participants were 49 and 48 years, respectively. On average, the cultivated landholding size of the sample respondents was about 0.45 hectare.

3.1.3. Land holding size
The average cultivated landholding size for program participants was 0.35 hectare whereas that of the non- participants was 0.38 hectare. Thus, the mean difference of the landholding between program participants and non- participants was found to be not statistically significant.

3.1.4. Livestock holding
The average number of livestock owned by the sample respondents prior to the program intervention (productive safety net program) was converted into tropical livestock unit (TLU) and this was used as lagged variable in matching technique. On average, the sample respondents have had about 3.7 while the program participants and the non- participants have 3.5 and 3.3 TLU, respectively. Prior to the program intervention, however, the mean difference in terms of TLU between the program participants and non- participants was found to be not statistically significant.

Currently, on average, program participants and non-participants have 4.5 and 2.5 TLU, respectively. The result revealed that on average the TLU of the program participants have increased from 3.5 to 4.5 while that of the non- participants have decreased from 3.3 to 2.5. After program intervention, the average size of TLU for program participants has increased by one fold while that of the non-participants has declined by 0.8. Statistically, this was found to be significant. Oxen are important assets and were treated separately; on average the sample respondents have about 1 TLU. The mean oxen TLU for the program participants and non- participants were 1.16 and 0.67, respectively.

4. Econometric Analysis of Welfare Effects (Impact of PSNP on Assets)
4.1 Impact on Livestock holdings
The average the TLU of the program participants has increased from 3.5 to 4.5 TLU while that of the non- participants have decreased 3.3 to 2.5 TLU. After the program intervention (productive safety net program), the average size of program participants has increased while that of the non- participants has declined. The mean difference in terms of TLU between program participants and non- participants was found to be positive and statistically, significant at 1 percent level of significance.

4.2. Impact on productive asset
All asset categories have been valued in Ethiopian Birr based on their current prices as reported by each sample respondents, but deflated. The result indicated that the value of the productive assets at their prices (but deflated) was higher for program participants than non-participants. The difference in the mean value of the productive assets between program participants and non- participants was positive and statistically significant (at 5 percent and at

10 percent using radius and kernel, respectively), but it was significant based on nearest neighbor matching estimators.

4.3. *Impact on durable and household goods*

The impact of the PSNP on the value of the durable goods was positive and statistically significant (at 10 percent). This indicated that the program participants were able to protect their durable goods as a result of the program's intervention. The mean value of the durable goods was found to be positive and statistically significant (at 5 percent). The impact of the PSNP on household goods was found to be positive and statistically significant (at 1 percent). A study conducted by Devereux *et al*. (2006) indicated that the impact of the program on assets protection has positive and significant effect (at 10 percent). In terms of asset protection, non-participants had more likely to experience decrease in their asset-holding than program participants.

Table 1 – ATT Estimation Results of the Impact of Productive Safety Net Program on Assets

Outcome variables	Estimators	No. of PSNP participants	No. of non-PSNP participants	ATT	t-values
Livestock	Nearest Neighbor	332	123	1.966	3.490***
	Kernel	210	143	1.845	10.375***
	Radius	212	143	2.012	8.647***
Productive asset	Nearest Neighbor	218	123	31.397	1.031
	Kernel	218	143	35.609	1.661*
	Radius	218	143	38.324	2.357**
Durable goods	Nearest Neighbor	218	123	34.518	2.154**
	Kernel	218	143	36.075	2.329**
	Radius	218	143	33.882	2.059**
Household goods	Nearest Neighbor	218	123	89.321	3.627***
	Kernel	218	143	80.196	3.744***
	Radius	218	143	70.202	3.292***

Significant differences are indicated with: * $p<0.05$ (5 percent level), ** $p<0.01$(10 percent level), *** $p<0.001$ (1 percent level) and standard errors are bootstrapped.

4.4. Impact of Productive Safety Net Program on Consumption

Consumption expenditure was used as impact indicator while evaluating impact of the program (Productive Safety Net Program, PSNP), and it was computed as per adult equivalent consumption expenditure.

4.4.1. Impact on consumption expenditure

The result of this study revealed that on average, program participants consumed more food items as compared to the non-participants. The difference in the mean value of food consumption per adult equivalent between program participants and the non- participants was found to be positive and statistically significant (at1 percent). Therefore, the overwhelming majority of program participants participating in the PSNP consumed more food items. A study conducted by Gilligan *et al.* (2008) found that positive impact on per capita food expenditure and this was statistically significant (at1 percent) for program participants. Thus, program participants were more likely to consume more food as compared to the non-participants. The estimated non-food household consumption expenditure per adult equivalent was positive, but it was not statistically significant. The total (food and non-food) consumption expenditure per adult equivalent for program participants was found to be higher as compared to that of the non- participants. The estimated results indicated that the mean total consumption expenditure per adult equivalent for program participants was positive and

statistically significant (at 1 percent). The principal results of the study on consumption expenditure showed that the program intervention (productive safety net program) enabled program participants to increase household consumption expenditure very considerably. A study conducted by Devereux *et al.* (2006) noted that 75 percent of program participants have been reported that they consumed more food of better quality and Barnes (2008) also noted that the PSNP had positive and statistically significant (at1 percent) impact on household consumption expenditure.

Table 2 – ATT Estimation Results of Impact of PSNP on Household Consumption

Outcome variable	Matching method	No of PSNP participants	No of PSNP non-participants	ATT	t-values
Food consumption	Nearest Neighbor	332	123	1254.59	6.960∗∗∗
	Kernel	218	143	1061.25	8.144∗∗∗
	Radius	218	143	1070.22	9.227∗∗∗
Non-food consumption	Nearest Neighbor	218	123	9.50	0.127
	Kernel	218	143	30.98	0.620
	Radius	218	143	31.04	1.011
Total consumption	Nearest Neighbor	218	123	305.75	3.753∗∗∗
	Kernel	218	143	242.72	4.072∗∗∗
	Radius	218	143	241.50	5.303∗∗∗

Significant differences are indicated with: * $p<0.05$ (5 percent level), ** $p<0.01$(10 percent level), *** $p<0.001$ (1 percent level) and standard errors are bootstrapped.

5. Econometric Analysis of Poverty

5.1. Poverty Line (TL)

The incidence of poverty was analyzed using the total poverty line (330 per month or 3960 per year per adult equivalent Ethiopian Birr) and then food poverty line of 235 per month or 2820 Ethiopian Birr per year per adult equivalent. Accordingly, 30.33 percent of the respondents were living below the poverty line with poverty gap index of 6.6 percent and poverty severity index of 2.77 percent. Ahferom (30.33 %) and Merebleke (25.55%), with poverty gap and severity index level (2% and 0.55%) and (1.85% and 0.45%) were the leading woredas (Districts) in this zone with their high and low level of poverty, respectively.

Table 3 – Incidence of Poverty by Woreda (Districts)

Woreda (District)	Poverty Estimates			Total Poverty line
	P_0	P_1	P_2	
Geter Adwa	0.351(0.038)	0.052(0.009)	0.013(0.003)	330
Ahferom	0.313(0.031)	0.054(0.008)	0.016(0.003)	330
Kola Temben	0.346(0.036)	0.049(0.008)	0.013(0.003)	330
Merebleke	0.320(0.036)	0.025(0.009)	0.007(0.003)	330
LailayMachew	0.308(0.042)	0.077(0.014)	0.029(0.008)	330
Population	0.328(0.008)	0.084(0.003)	0.031(0.001)	330

Values in brackets are standard deviations

5.2. Poverty and gender of the household

About 30 percent of the female headed households were found to be below the poverty line with poverty gap index of 7.3 percent and severity index rate of 2.6 percent. Male headed

households had 0.23 level of poverty head count index with poverty gap index of 0.062 and squared poverty gap index of 0.028. Thus, the incidence of poverty was higher in female headed households than their counter part.

Table 4 – Incidence of poverty by gender

Sex of the household head	Poverty Estimates			t-statistics
	P_0	P_1	P_2	
Female	0.301(0.0021)	0.073(0.0051)	0.026(0.0023)	
Male	0.231(0.0076)	0.062(0.0025)	0.028(0.0011)	0.004***
Population	0.233(0.0046)	0.061(0.0031)	0.026(0.0010)	

***Significant at 1% & values in parenthesis are standard deviation

5.3. Poverty and education

As most studies have indicated, education has positive and significant impact on poverty. Highest level of poverty of 35.55 percent (head count index) was observed in illiterate households; accompanied by high level of poverty gap index 9 percent and severity index of 1.65 percent.

5.4. Poverty and family size

Significant numbers of research works carried out to express the relationship between poverty and family size revealed that there is an inverse relationship between households' size and that of poverty status of the household. A household who have a larger family size has the higher probability of falling into poverty (Esubalew, 2006). The average family size of the sample respondents was 5.66 per household. Whereas the average family size of the program participants was 5.33 per household while that of the non-program participants was 4.85 per household.

As the family size of the household increased, the incidence of poverty also increased. About 6.3 percent of the households that had a family size of 2-3 were living below the poverty line with income short fall of 3 percent and poverty severity index of 1.1 percent. About 12.8 percent of the households with family size of 4-5 were living below the poverty line with poverty gap index of 4.12 percent and poverty severity index of 1.88 percent. Thus, as has been indicated by most empirical literatures, the level of poverty had increased directly with an increment of family size of the households.

5.5. Poverty and Productive Safety Net Program

The program participants were 60.8 percent (n=365) while the remaining 39.3 percent (n=235) were non- participants, but eligible. The result revealed that the poverty level of the program participants was lower than that of the non-participants. The results also indicated that 30.33 percent of the program participants and 31.11 percent of the non-participants were found to be living below the total poverty line. Furthermore, the poverty severity index was lower for the program participants.

Based on the level of food poverty, there was statistically significant (at 5 percent) difference between the two groups (participants and non-participants). The head count indices were 0.37 and 0.191 for program participants and non-participant households, respectively. The poverty gap index was lower for the program participants (0.023) than that of the program non-participants (0.043). And the poverty severity of the program participants (0.012) was 1.9% lower than the non-participants (0.031).

Table 5 – Level of Poverty by program participation

Variable	Total Poverty Estimates			TPL	Food Poverty Estimates			FPL
	P_0	P_1	P_2		P_0	P_1	P_2	
Participants	0.3033	0.066	0.025	**330**	0.370	0.045	0.021	**235**
Non-Participants	0.3110	0.059	0.022	**330**	0.391	0.051	0.026	**235**
Population	0.30615	0.0624	0.025	**330**	0.383	0.053	0.020	**235**
	Pearson chi2(1) = 0.3432 Pr = 0.411[N]				Pearson chi2(1) = 4.111 Pr = 0.015**			

**Significant at 5% and N = non-significant

5.6. *Food poverty*

About 235 Ethiopian Birr measured in per adult equivalent was used as food poverty line, accordingly, 30.6 percent of the households were found to be below the food poverty line with income gap of 6.24 percent and squared poverty gap index of 2.1 percent. As depicted in table 2 below, the level of food poverty incidence varied from Woreda (District) to Woreda (District). The highest food poverty head count index (0.217) was recorded in Geter Adwa and the least was observed in TahitayMachew (0.111). In addition, the poverty gap (0.034) was higher in Geter Adwa and the least was observed in MerebLeke (0.003).

Table 6 – Food Poverty by Woredalevel

Woreda	Food Poverty Estimates			Food Poverty Line
	P_0	P_1	P_2	
Geter Adwa	0.217(0.031)	0.034(0.013)	0.012(0.002)	235
Ahferom	0.157(0.021)	0.015(0.004)	0.006(0.003)	235
Kola Temben	0.126(0.022)	0.014(0.004)	0.005(0.003)	235
LailayMachew	0.134(0.030)	0.028(0.014)	0.011(0.011)	235
MerebLeke	0.215(0.012)	0.003(0.002)	0.001(0.001)	235
Population	0.125(0.004)	0.024(0.001)	0.013(0.001)	235

Source: Author's own survey computation

6. Conclusion and Recommendations
6.1. *Conclusion*

The study specifically revealed that the Productive Safety Net Program (PSNP) intervention has enabled the program participants to retain their assets holdings. The program participants, as a result of the program's intervention, have increased their livestock holdings. The program participants owned more livestock in terms of TLU, than the non-participants. The study revealed that the program has positive and statistically significant impact on productive assets, durable goods, and household goods. Positive and statistically significant results were obtained for food consumption per adult equivalent and total consumption per adult equivalent (at 1 percent).

Based on the level of food poverty, there was statistically significant difference between the two groups (participants and non-participants). The head count indexes were 0.37 and 0.191 for program participants and non-participant households, respectively. The poverty gap index was lower for the program participants (0.023) than that of the program non-participants (0.043). And the poverty severity of the program participants (0.012) was 1.9% lower than the non-participants (0.031). Furthermore, the poverty severity index was lower

for program participants. Generally, findings this study revealed that the impact of the Productive Safety Net Program (PSNP) has positive and statistically significant effect on poverty reduction through increasing households' overall family consumption expenditure and in protecting assets of the rural households.

6.2. Recommendations

Based on the above findings of the study, the following recommendations are made:

o   The government should encourage the program participants to re-orient on commercialized dairy and fattening livestock development activities in order to reduce the problem of food insecurity and to improve their income sources.

o   Every member of the program participants should be fully targeted into the program so that improved their food insecurity problems and to ensure self-food sufficiency (the program should be individual focused than household based).

o   In order to target all the eligible ones, the government should consider reducing the duration of benefits from the program (reducing the duration of program benefits) so as to increase the number of participants within the budget constraints. Thus, the researcher recommends reducing program participation period from five to four years with series follow ups.

o   Most of the program participants were male-headed households relative to the female-headed households. Hence, the program should able to include more female-headed households or at least in the same proportion as that of the male-headed households.

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QUALITY DIMENSIONS, VALUE, SERVICE COST AND RECOMMENDATION BEHAVIOUR: EVIDENCE FROM THE NIGERIAN CELLULAR INDUSTRY

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Abstract

The present study proposed and test a model that connects both affective and cognitive factors in cellular service to customers' recommendation behavior. Results of the analysis of data collected through questionnaire from 293 respondents with cellular phones and active account in the Nigerian cellular industry indicate that core cellular service dimensions, service cost (price) and hedonic values are significant determinants of customers' recommendation behavior. In addition, the study found that customer service and utilitarian value exert negative effect on recommendation behavior. It seems that strengthening the performance of service providers on core service attributes, service cost (price) and the entertainment and emotion evoking aspects of cellular service is of more value in partnering with customer to enlarge customer base through recommendation.

Keywords: quality dimension service cost; recommendation behaviour; hedonic value; utilitarian value; cellular phone; service attribute.

1. Introduction

There is a growing recognition of the pivotal role of cellular communication in the economic landscape of most countries in sub-Saharan Africa (SSA). Accessibility, low cost and ease of use largely account for the increased adoption of cellular communication, even among the poor and less educated segment of the populace. Indeed, cellular communication has revolutionized the way people live and relate in close and culturally knit societies that exist in most societies in the region. Besides, it has proved to be a veritable panacea in circumventing the seemingly intractable transportation problems which are the result of the poor urban and regional planning approaches of succeeding governments in the region. Consequently, cellular industry in the region can be aptly described as a growth industry with increasing potentials buoyed by the socio-cultural orientation of the people, the rising levels of disposable income of families and the huge market at the bottom of the pyramid.

The growth and potentials of cellular industry has attracted the interests of government, business communities and academic researchers' interest. Government sets the regulatory framework that guides competitive conduct of operators, protects customers and increases competition; researchers attention on the other hand are been focused on different aspect of the industry (Oyeniyi and Abiodun, 2008, 2010, Abiodun and Oyeniyi, 2012; Oghojafor, Mesikez, Omoera, and Bakare, 2012.). It has been argued that the industry in Nigeria in particular has attracted national and international cellular providers. The industry's competitive landscape is characterized by intense competition as a result of new customers in new geographical areas, product and service duplication, customers' defection or switching, new system features, schemes and technological advancement in services. Service providers are interested in painstakingly building sustainable competitive advantage that enhances their financial performance.

These unique characteristics of the cellular market have not only made quality in service delivery critically important but have indicated these as drivers of customers' satisfaction and recommendation behavioural intentions. From strategy standpoint, service quality attributes are critical input to a firms' resource allocation strategy and quality improvement efforts (Gustafsson and Johnson, 2004).

Traditionally, cellular firms differ in their ability to develop competitive tactics around key service features in order to secure a link with customers' satisfaction; and satisfied customers' base in order to establish partnership in enlarging the market size. However, quality is a multi-dimensional construct and the general antecedents have been studied across industries as well as the interconnection between service quality and customers satisfaction. Indeed, customer satisfaction as a function of the consequence of quality is not a flawed presumption nor is it out-of-range that satisfaction should affect post-purchase behaviours. However, the inter-connections between cognitive factors such as service quality, customers' satisfaction, recommendations' intentions and affective factors: hedonic and utilitarian dimensions of value in the cellular industry have not, in general, been well documented empirically in literature from transition economies in Africa. Therefore, in terms of statistical evidence, little seems, to exist regarding how service quality and affective factors like hedonic and utilitarian dimensions relate to recommendations' behavioural intentions.

The dearth of empirical studies integrating these concepts cannot be compensated for by the fact that similar studies exist in developed economies. This argument becomes valid because accepting theories and theoretical interconnections of other cultures without empirical validation in other climes especially in transition economies such as we have in sub-Saharan Africa where unique cultures significantly impact on customers' behaviour, may not be appropriate (Lai, Griffin and Babin, 2009).

Therefore, the present study extends cellular communication research in Nigeria and examines the interconnections between cognitive factors such as quality dimensions, service cost and recommendation behavioural intention and affective dimensions of values. The objective of the current research is to provide an insight into quality of service dimensions as drivers of customers' recommendation behaviours and the interconnections of affective factors with cognitive aspect of cellular service. A guiding question is: do cognitive and affective factors significantly relate or determine recommendation behaviours in the cellular industry?

2. Conceptual Development and Hypotheses
2.1. Service Quality and Recommendation Intention
Conceptually, service quality is often viewed as a set of service dimensions evaluated relative to customers' expectations and perceptions (Schembri and Sandberg, 2011). The implication

is that, quality is the outcome of an evaluation of several attributes of a service, primarily controlled by a supplier (Baker and Crompton 2000). Consequently, according to Petrick (2004), quality is conceptualized as a measure of the provider's performance.

The increasing importance of the service sector in national economies has made service quality an important concept in the literature. Indeed, quality has become a strategic concern in service industry (Byers and Lederer, 2001; Vanniarajan and Gurunathan, 2009). In order to better understand the antecedent and consequence of competitive advantage and strengthen post-purchase behavior, it is often considered important to measure service quality as a core variable (Palmer and Cole, 1995; Zahorik and Rust, 1992). For example, studies seem to hold service quality as an indicator of customers' satisfaction which is being related to post purchase behaviours like loyalty, word-of-mouth or re-purchase behaviours (Lee, Lee and Yoo, 2008; Festus and Hsu,2006).

High quality, it seems, correlate with high customers' satisfaction (Cronin, Brady and Hult, 2000), albeit, the relative importance of service quality factors on customer satisfaction is found to differ across different service industries (Vanniarajan, et al, 2009). However, Lai, et al, 2009 posited that the connection between quality and satisfaction hold across cultures; and these provide more explanation to variance in customers' loyalty. A predominant view in literature is that service quality drives customer satisfaction indicating that satisfaction and recommendation are normally considered as higher order constructs (Brady and Robertson, 2001; Lai et al, 2009).

Conceptually, quality is adjudged and expressed through basic features and attributes of a product or service. Customers' perception of providers' performance on key attributes of cellular communication services defines overall quality. Quality or performance perceived is the outcome of experience of interacting with various dimensions and attributes of cellular services. Attributes of cellular services may be taken to include inter alia; call clarity, network coverage, price structure and customer support service (Kim, 2000; Kim, Park and Jeong 2004).

Quality in the context of cellular communications industry extend the traditional definition of service quality to incorporate aspects that are relevant to cellular services (Kheiry and Alirezapour, 2012). Customer service may be distinguished from core service component in that it supports core service element by providing care, intimacy and communication to strengthen service performance perceptions (Gremler, 1995). It is cellular service provider strategic effort at securing interpersonal relationship built on recurrent interaction with customers. Customers' response to service attributes provides organizations and its members' feedback about performance and serves as input in customers' retention and management of post-purchase behaviours (Turner and Krizek, 2006).

According to Turner et al (2006), feedback from customers' satisfaction provides organizational stakeholder information that has potential for customers' retention as well as the development of new ones. Literature indicates that satisfaction with service dimensions, affects individuals' motivations to recommend services or products (Lam, Shankar, Erramilli and Murthy, 2004, Morgan and Rego, 2006). Indeed, customers who have positive post-service impression about service features are willing to recommend services to others (Palmatier, Dant, Grewal and Evans 2006). Indeed, subscribers' recommendations to others are positive and desirable outcome of service experience which from service providers' perspective indicate subscribers' commitment to partner with providers in enlarging the market. Research evidences suggest the cost of attracting new customers and increased saturation of the market has made customers' recommendations to others a strategic option for telecommunication providers (Abiodun, Oyeniyi and Osibanjo, 2012)

2.2 Hedonic and Utilitarian Values

Literature is in agreement with conventional wisdom that perceived value should be related to post-service positive impression or satisfaction. Research evidence shows that the perceived value by customer correlates with satisfaction (Oh, 2000) and customers' satisfaction becomes more managerially useful in the light of integration with perceived value (Woodruff, 1997). Preponderance of evidence is that, perceived value holds more explanatory power to repurchase intention than quality or satisfaction (Cronin, Brady, and Hult 2000; Oh, 2000). Value for cellular services may be for utilitarian or hedonic purpose. Utilitarian value is task-related and rational such as the accomplishment of work or business-related calls, time saving-device or emergencies (Batra and Ahtola, 1991, Babin, et al, 1994, Aoki and Downes, 2003).

Materials are often acquired at least, in part, for their usefulness; other higher purposes for such acquisition are, in most cases, considered secondary. Hedonic value relates to responses evoked during service experience; it is both personal and subjective and results from fun and playfulness (Holbrook and Hirschman, 1982, Babin et al, 1994). In line of the logic of Maslow's motivations theory, hedonic values may assume additional dimension of importance in affecting behavior if the utilitarian aspects have been reasonably satisfied. For example, if many cellular providers compare reasonably on basic communications aspect of the competitive domain may reside on the hedonic aspect of their services.

The entertainment and emotional content of cellular services constitute the hedonic worth, such as example enjoyment and chat with friends (Lee and Murphy, 2006). However, while we may assume that the utilitarian value should be most prominent customers' need in cellular services, the advent of hedonic-friendly hand-held devices and providers' emphasis clearly indicates hedonic potentials of cellular services. Consequently, determining the antecedent of satisfaction in cellular phone use, should include the consideration of both utilitarian and hedonic aspect given the cultural and family orientation of some societies. Studies indicate that, youth tend to show higher hedonic consumption of cellular services (Wajcman and Beaton, 2004. Lee et al, 2008).

Understanding users' evaluation of cellular services ought to integrate both the cognitive aspect such as quality and the affective factors since service providers have shown more intense use of both factors in competitive conduct. Based on the preceding literature evidence, the following research model and hypotheses have been proposed for empirical verification.

H_1: Service costs (prices) positively affect recommendation behavior in the cellular industry.

H_2: Core service dimensions are significant predictor of recommendation behavior.

H_3: Customer service is a significant predictor of recommendation behavior in the cellular industry.

H_4: Utilitarian value of cellular service is a significant explanatory variable of recommendation behavior.

H_5: Hedonic value exert significant predictive power on recommendation behavior.

The proposed correlation between these hypotheses can be seen from the high-level view in Figure 1 below.

Figure 1 - Proposed Research Model
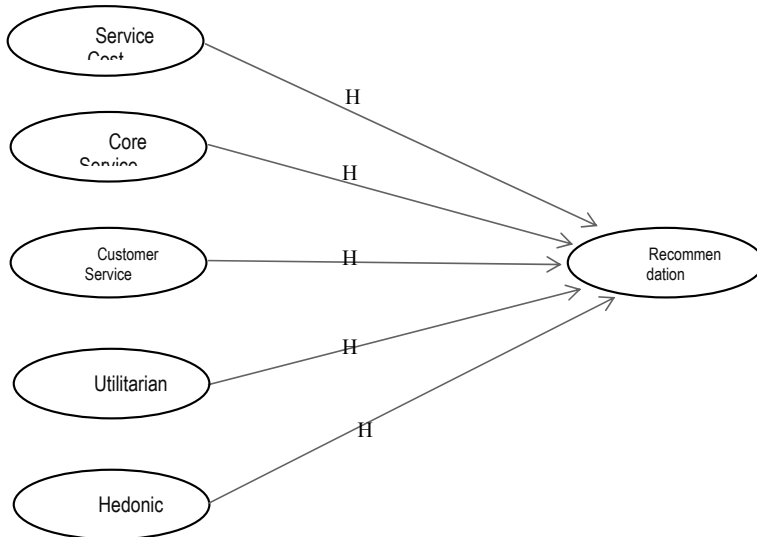
3. Materials and Methods

Consistent with the study's focus, we utilized survey research design. Survey research design was adopted because it is not only economical but feasible in addressing the research problem of interest. Data for the study was obtained from two hundred and ninety three (293) respondents with cellular phones and active accounts in Lagos, the commercial and economic capital of Nigeria, and at another location on the outskirt of the city.

The choice of these study locations is largely purposeful and influenced by the heterogeneous nature the population which is more or less a miniature of the country with most tribes in the country represented. Furthermore, the outskirt location in the area has a private university within its environ. Indeed, the population in these conveniently-sampled locations can be described as not only socially heterogeneous but homogeneous in terms of awareness and use of cellular services with somewhat refined taste or service expectations from cellular providers. We may as well describe these locations as pacesetters in cellular usage and expectations of improved services. Thus, the study area is made up of people who are conversant with the assortment of providers' cellular service offerings.

Respondents in this study, in most cases, subscribe to and utilize the services of more than one service providers. The advent of multi-sim hand-held terminals and reduced call rates within a network had largely encouraged this practice. These practices among subscribers impose significant competitive pressures on cellular providers as they strive for retention of subscribers and tactical moves to make their network the preferred choice. Respondents' argument for simultaneously subscribing to more than one service provider is premised on the need to hedge against erratic call signals and call drops.

In most developing economy where telecommunications providers need to provide energy that power fixed communication equipment, call drops and erratic signals are common phenomenon. It may, therefore, be reasonable to accept the evaluative opinions of these respondents as valid expression of their evaluation of the perceptions of cellular services in

the industry (Osuagwu, 2003). Besides, it indicate respondents' judgments of service providers' performance on the dimensions specified in the research instrument.

The research instrument utilized in the data collection was a set of structured questionnaire focused on key research variables in the study. The variables were developed from literature and supported by anecdotal and empirical evidence: service quality dimensions, value (hedonic and utilitarian), service cost and recommendations' behavioural intentions.

Each of the main variables was measured using multi-item indices with each item scaled on a 7-point likert scale to enable respondents indicate the intensity of their reactions for each item. Service quality was operationalized along two main sub-dimensions: customer service and core components of cellular service, for example, voice clarity over the network, call drop during calls, network coverage, among others. Customers' services relate to the competence, responsiveness, information quality and complaints handling procedures of customers' service personnel. These service dimensions are normally specified in service literature as indicator of quality in service. The logic is that although cellular users may not regularly interact with customer service personnel, one or two unpleasant encounters or poor complaints handling procedure may impact negatively on customers' perceptions of service and influence subsequent decisions or relationship with the provider.

In a transition economy with significant proportion of the populace on or below poverty line, the cost of service has implications for the acquisition, use and continuity of cellular service and may be a potent determinant of subscribers' satisfaction or quality perception. Some of the questionnaire items were adapted from measure validated from prior studies. These items, however, were adapted with reference to the context of the present studies, therefore, the question items designed for the study benefited immensely from literature, specifically from the works of Babin et al,1994, Stone, Good and Baker-Eveleth, 2007, Eshghi, Haughton and Topi, 2007, Bhattacherjee, 2001).

Question items on hedonic and utilitarian values were scaled so that respondents could react to the frequency to which they found cellular service usage as task- related or the use evoked emotions or they enjoyed the entertainment content. Scale identification was slightly varied so that 'not at all' was ascribed 1 and 'always' was ascribed 7. The costs of cellular services scaled included call rates and charges, short messages (sms) charges and internet charges.

Generally, all the items showed good reliability results as indicated by the Cronbach alpha scores which ranged from 0.8 to 0.9: core service (0.89), service cost (0.84), customer service (0.93), recommendation intention (0.93), hedonic value (0.82), and utilitarian value (0.80). We may reasonably conclude that the factor possesses adequate convergence. Data analysis procedure was done with SPSS version 19.0 for windows and AMOS 19.0 software was also utilized to perform statistical analysis of some aspect of the data set. In addition, the overall fit of the study model was assessed using various fit indices.

4. Results and Discussion

As shown in table 1, the effective sample for the study consists of 128 males and 165 females, indicating that 56.3% of the respondents were females. The profile of the sample indicates that 225 respondents are above 20years with 129 respondents or 44% of the sample located in the articulate age group of 30 and above. In terms of value, these age groups are more likely to emphasize the hedonic aspect in their usage of cellular service. Significant proportions of the respondents are married (45%) or had been in married relationship at a time (19 respondents are divorcees) with 48% of the sample been unmarried. Most of the respondents have means of livelihood: paid employment, 100 (34%); self-employed, 74(25%) and

students, 119 (40%). With reference to the background of participants in the study and subject to usual limitations associated with the research approach utilized, the sample may be considered as representing a rich data set.

Table 1 – Sample Profile

Variables	Category	Frequency	Percent
Age	< 20 years	68	23.2
	21 – 40 years	163	55.6
	41 and above	62	21.2
Gender	Males	128	43.7
	Females	165	56.3
Marital Status	Married	142	48.5
	Single	132	45.1
	Once married (divorced)	19	6.5
Employment Status	Paid/Salaried Job	100	34.1
	Self-employed/un-salaried job	74	25.3
	Students/unemployed	119	40.6

The result of the structural models with standardized parameter estimates as schematically presented below indicate the hypothesized impact of the study variables on recommendations behavior (see figure 2) . The model as conceptualized, reasonably indicates that the latent variables in the study showed moderate explanatory power for recommendation behavior in the cellular industry. The model showed that service costs, customers service, hedonic value, utilitarian value, and core service dimensions account for 64% of variance of recommendation behaviours. Overall, the values of the fit index indicate that the research model did not achieve acceptable fit on some indices as common in studies.

Notwithstanding, more indices suggest that overall it is an acceptable model fit which compared favourably or better than model fit indices in similar studies (Kim et al, 2004, Ali, Waseemullah, Ahmed and Akram, 2009). The fit index indicates the following result: (RMSEA=0.09, CMIN/df=3.272, CFI= 0.902, IFI=.902). Minimum was achieved in the model with Chi-square = 648.453, d/f = 174, P = .000; traditionally, we would want a non-significant Chi-square value, however, it is argued that Chi-square is not a very good fit index in practice, because it is affected by sample and model size. The CMIN/df value of 3.272 indicates the acceptability of model fit as the value is within the acceptable CMIN/df value limit of less than 5 (Schumaker and Lomax, 2004, Kremelberg, 2011).

The research model proposed that service features or attributes, perceived value and cost (price) are significant predictors of customers' willingness to recommend cellular services.

The parameter estimates (standardized, figure 2 and regression weight, table 2) indicate that cellular providers' performance on core cellular service dimensions is the most significant predictor (H2:β= 0.458, p<001) with service cost or price (H1:β= 0.452,p<0.001); and hedonic value (β=0.383,p<0.005) being next in predictive ability of customers recommendation. Generally, the variables considered in the study exert statistically significant effect on customers' recommendation behaviours with service cost, core service and hedonic value being the significant predictors of recommendation behavior.

Customers support service activities (H3) of the cellular providers and the utilitarian value (H4) customers derived from cellular use were found to exert negative predictive influence on recommendations. However, the hypothesized impact of customer service is not statistically significant.

Figure 2 - Structural Model with Standardized Parameter Estimates

CMIN/df= 3.727
GFI= 0.83
Comparative Fit Index (CFI) = 0.902
Normed Fit Index (NFI) = 0.87
Root Mean Square Error of Approximation (RMSEA) = 0.09
Incremental Fit Index (IFI) = 0.902
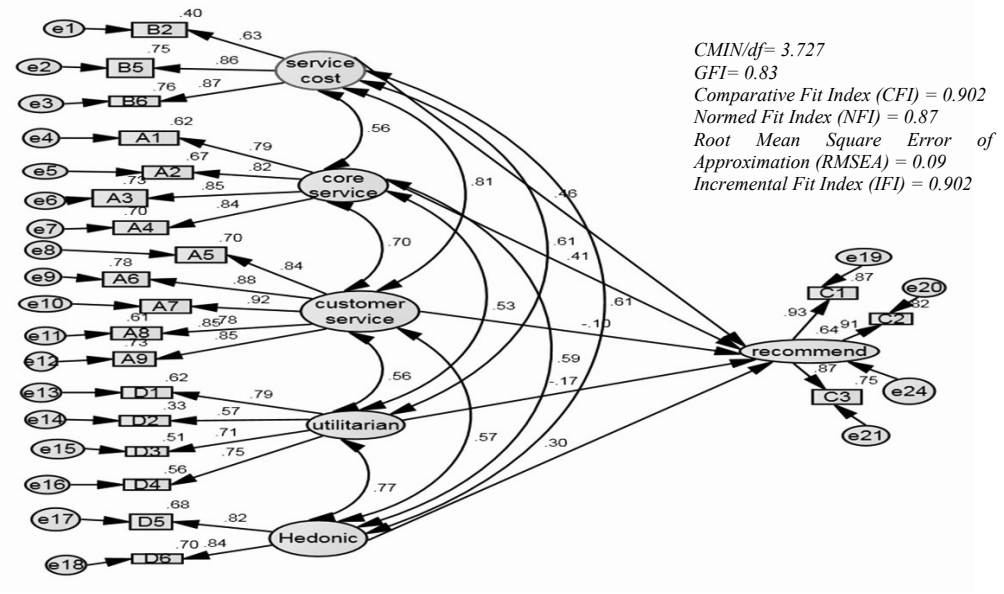
These variables (H3: customer service β= -0.096, p> 0.1; H4: utilitarian value β= -0.197, p<0.005) does not positively impact or engender customers' willingness to recommend, suggesting some mediating variables would be required to convert them to recommendations behavior. However, if the prevailing assumption that customer satisfaction as a lower construct to recommendation is accepted, the result here seems inconsistent with earlier studies which found positive relationship between customer support services and customer satisfaction (Ali et al, 2009; Kim et al, 2004).

Table 2 - Summary of Research Hypotheses Result

	Estimate	S.E.	C.R.	P	Hypotheses	
Recom ← Hedonic	.383	.125	3.068	.002	H5	Accept
Recom ← Customer_Service	-.096	.097	-.991	.322	H3	Reject
Recom ← Core_Service	.458	.084	5.428	***	H2	Accept
Recom ← Utilitarian	-.197	.110	-1.799	.072	H4	Reject
Recom ← Service_Cost	.452	.099	4.542	***	H1	Accept

The finding, however, corroborates the assertion that satisfied customer may not become loyal nor subsequently recommend (Jones and Sasser 1995). Indeed, in most transition economies cellular providers are reasonably comparable with respect to customer services activities; therefore, the contributory roles of customer support activities in securing competitive advantage may not be that significant. Hedonic value (H5) has significant direct effect on recommendation behavior than utilitarian value (H4) of cellular services which showed an inverse or negative predictive relationship. Customers seem to value the entertainment content and emotions evoked by the use of cellular services such that, the utilitarian aspect is taken for granted. A cellular service, by nature, is expected to fulfill utilitarian value that customers may perhaps only take notice of, if it fails on that line. Or the

best explanation could be found in the culture and unique nuclear and extended family system that prevail in the setting of the study.

5. Managerial Implications and Conclusion

The main thrust of the study is to relate both affective and cognitive factors in service management to recommendation behaviour in the cellular industry. Evidently, company's performances on key service attribute indicates perceived quality, therefore, the study provides practical insight to the interconnection between service attributes and the beneficial impact of service attributes in making customers' base partner in enlarging the market of the cellular industry. The implication for service management is that customers' perceptions of company's performance on key dimension of service attributes is an important antecedent of recommendation behavior which further serves as a strategic driver of product and service diffusion; and a source of competitive strength.

Competitive advantage through recommendation or partnership with customer base may be derived from effective performance on core service dimensions. However, similarity in augmented service packages (customer service) may not offer real advantage in terms of securing customers' recommendation. In addition, perceived task-related or utilitarian value of cellular service is weak as a tool for ensuring that service providers' customer base partner in enlarging the market. Subscribers, possibly, take the utilitarian aspect for granted when providers' performances on this aspect are comparatively similar.

Hedonic dimension of value, on the contrary, indicates beneficial customer recommendation advantage which suggests the need for cellular providers to monitor performance not only on key cellular features but also the entertainment and emotion-evoking features of their service. Indeed, the direct effect of the hedonic aspect of cellular service on recommendation behavior indicates that subscribers may be significantly influenced to recommend cellular service by considerations that are neither economic, functional nor task related. It seems evident that given the cultural and economic settings within which cellular companies perform on service attributes and service cost (price), the hedonic aspect of value is a strategic building block to customers' recommendation behavior or partnership with customer for market expansion. It may be reasonable to suggest that one of the competitive domain for cellular service providers seem to be in the hedonic aspect of their services. Consequently, it may be suggested that management need to focus its effort in enhancing the entertainment and emotion evoking aspects of cellular service as means to securing subscribers partnership for market expansion.

Future research effort may seek to explore the impact of demographic variables such as income, age, gender and culture on hedonic aspects of cellular service. Hedonic aspects of cellular service might show varied impact on recommendation behavior among different age groups, culture or income levels. Both managers and academics will benefit from empirical insight of the effect of hedonic value which might show variations across age on income levels.

Key to Research Variables

A1	Network coverage	B6	Internet Charges
A2	Calls clarity	C1	Recommend to friends and relations
A3	Network availability	C2	Recommend to acquaintances
A4	Connectivity without call dropping	C3	Explain benefits to friends and others
A5	Personalized attention	D1	Use only services I must
A6	Courtesy	D2	Use to accomplish goals
A7	Competence	D3	Use services I really need
A8	Communication of network's technical problem	D4	Use mainly for work related issues
A9	Customer service willingness to resolve complaints	D5	Enjoy use of mobile services
B2	Call rates and Charges	D6	In comparison time used on mobile is truly enjoyable
B5	SMS charges		

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LYING FOR THE GREATER GOOD: BOUNDED RATIONALITY IN A TEAM

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Abstract

This paper is concerned with the interaction between fully and boundedly rational agents in situations where their interests are perfectly aligned. The cognitive limitations of the boundedly rational agent do not allow him to fully understand the market conditions and lead him to take non-optimal decisions in some situations. Using categorization to model bounded rationality, we show that the fully rational agent can nudge, i.e., he can manipulate the information he sends and decrease the expected loss caused by the boundedly rational agent. Assuming different types for the boundedly rational agent, who differ only in the categories used, we show that the fully rational agent may learn the type of the boundedly rational agent along their interaction. Using this additional information, the outcome can be improved and the amount of manipulated information can be decreased. Furthermore, as the length of the interaction increases the probability that the fully rational agent learns the type of the boundedly rational agent grows.

1. Introduction

In economic literature, one of the most commonly used assumptions about decision makers is the full rationality. When faced with an economic decision problem, a fully rational decision maker has the ability to see and understand what is feasible and what is preferable. Furthermore, he is also able to calculate the optimal course of action given these two constraints. This widely used assumption, which simplifies economic models, has received many criticisms for overlooking real life situations by ignoring cognitive limitations.

Wide literature initiated by Amos Tversky, Daniel Kahneman, and their collaborators provides us with experimental evidence that human beings depart systematically from full rationality due to cognitive limitations. These limitations affect their ability to recognize the available information on markets and their ability to compute. Herbert Simon, the originator of the phrase, defines bounded rationality as "rational choice that takes into account the cognitive limitations of the decision-maker-limitations of both knowledge and computational capacity" (Simon 1987).

Boundedly rational agents try to simplify and structure the economic decision process. A possible way to do this is to use categories. The usage of categories is also supported by psychological evidence that people in environments with abundance of information show the tendency to group events, objects or numbers into categories depending on their perceived similarities (Rosch and Mervis 1975). According to the social psychologist Gordon Allport "…the human mind must think with the aid of categories. We cannot possibly avoid this process. Orderly living depends upon it"(Allport 1954, pg 20). Both in economic and social psychological literature, there are many studies aiming to explain human behavior using categorization (e.g. see Macrae and Bodenhausen 2000 or Fryer and Jackson 2008).

The following example illustrates one possible way how the categorization process works. Consider a consumer who wants to buy a new television. There are an overwhelming number of available alternatives on the market. In order to make a decision, the consumer has to compare a long list of attributes among all products. These attributes include a wide variety of technical features (e.g. screen size, aspect ratio, resolution, contrast ratio, sound system, dimension, weight, etc.), price arrangements (price of the product, payment schedule, service fees), brand, warranty, product support, delivery service, etc. Unless the consumer is an expert on televisions, he may have difficulties in making decision because of this long list of items to consider for each product on the market.

What happens most of the time is that after eliminating the obviously undesirable alternatives (e.g. too expensive products), the consumer categorizes the rest of the alternatives so that in each category there are products with some similar attributes. At each step of the categorization process, the consumer chooses an attribute, attaches some criteria to it and partitions the set of products based on the criteria. Say, for example, he considers the screen size attribute and the criteria he attaches is if it is less than 45 inches or between 45 and 55 inches or larger than 55 inches. In this way, he partitions the products into three sets as "products with screen sizes less than 45 inches", "products with screen sizes between 45 and 55 inches" and "products with screen sizes higher than 55 inches". He continues the categorization process by choosing another attribute-criterion tuple, say resolution and a threshold for resolution. He further refines each set in his partition based on this new attribute-criterion tuple and obtains a new partition. In particular, he divides each of the three sets into two as high-resolution and low-resolution, and ends up with 6 sets (categories) in his new partition.[1]

Repeating this process for a number of steps, he ends up with a final partition of products.[2] Each category in this partition consists of products having similar features. He chooses one product from each category as a representative and compares all the representatives. Then he considers only the category whose representative gives the maximum utility.

The final decision is made among the products in that category. This process may lead to a non-optimal decision since the consumer considers only a small subset of products (the category whose representative gives him the highest utility) rather than the whole set. Furthermore, another feature of categorization is that even if their preferences are perfectly aligned, the decisions made by different individuals may not be the same. This follows from the fact that the final partition for a consumer is most likely to be different than the final

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[1] Low resolution-small size, high resolution-small size, low resolution-medium size, high resolution-medium size, low resolution-big size and high resolution-big size.

[2] The number of steps depends on the degree of the individual's bounded rationality. In the limit case (when the individual is fully rational, say, an expert on televisions), the number of steps is sufficiently large that each category contains only one product (finest partition).

partition of another consumer, since it depends on the number of steps and the criteria the individuals use.

The main purpose of this study is to analyze the interaction between fully and boundedly rational agents. More specifically, we focus on situations in which both agents work together in a team. The boundedly rational agent makes a decision after receiving a message from the fully rational agent and this decision determines the payoff of the team. We investigate if and how the fully rational agent can nudge, put differently, if he can stimulate the boundedly rational agent to avoid from non-optimal decisions. We show that he can achieve this goal by manipulating the information that he sends to the boundedly rational agent.

Furthermore, during their interaction, the fully rational agent can infer about the categories used by the boundedly rational agent; and hence, decrease the amount of manipulated information. The following setting about a fully rational boss and his boundedly rational namesake can be considered as a motivating example for our model. The boss is willing to buy arms for hunting animals. However, having a criminal record, he does not meet the conditions for registration of arms with the police forces. Therefore he asks his namesake, who does not have any records of criminal commitment, to buy a weapon for him. The namesake has also some connections in the weaponry black market. Therefore he can buy the weapon from either the legal or illegal market. At this point, it is important to note that the problem we are dealing with is not a principal-agent problem, but an instance of team theory initiated by Roy Radner. In principal-agent problems there is a conflict of interest giving rise to agency cost. In our setting, however, this is not the case since the preferences of the boss and his namesake are perfectly aligned.

Our paper takes as a departure point Dow (1991), where an economic decision problem for a boundedly rational agent visiting two stores and searching for the lowest price is modeled. The bounded rationality of the agent comes from his limitations in memory. More specifically, when the agent is in the second store, he cannot remember the exact price in the first store, but only remembers to which category it belongs. The agent makes a decision by comparing the price in the second store with the representative of the category to which the price in the first store belongs. Dow (1991) characterizes the optimal categorization. We depart from Dow's setting by introducing a fully rational agent and examining the interaction between the two agents.

Considering a similar setting, Chen, Iyer and Pazgal (2010) and Luppi (2006) examine the price competitions in the market and show that fully rational firms can take advantage of boundedly rational consumers. Chen, Iyer and Pazgal (2010) depart from Dow's setting by introducing two different types of consumers: totally uninformed consumers, who only consider buying from a specific store as long as the price is below their reservation value, and informed consumers with perfect memory, i.e., fully rational consumers. They characterize the Nash equilibrium of the game in which firms choose pricing strategies and consumers with limited memory choose their categories. It is shown that having boundedly rational agents in the market softens price competition. A similar setting is used by Luppi (2006), where there are rational firms on one side and boundedly rational consumers on the other side of the market. Consumers categorize the price space and make their decision based on their categories. It is shown that in the presence of boundedly rational consumers, two firms competing a la Bertrand depart from the standard equilibrium and make positive profits. The difference between these two papers and ours comes basically from the difference in the settings. In our case, the fully and the boundedly rational agents are working as a team and their common aim is to improve the outcome. In other words, the fully rational agent is not trying to take advantage of the boundedly rational agent like in Chen, Iyer and Pazgal (2010)

and Luppi (2006), but he is trying to decrease the expected loss caused by the boundedly rational agent.

Another literature strand to which this paper refers is the field of Information Transmission. Crawford and Sobel (1982) analyze costless strategic communication between a better-informed, fully rational sender and a fully rational receiver. The sender categorizes the support of messages and sends the category to which the realized message belongs instead of sending its real value. This situation arises because the players' preferences are not perfectly aligned. The receiver, after reading the signal, takes an action that affects both his and the sender's payoff. It is shown that as the preferences become more aligned, the number of categories the sender uses increases, i.e., the signal becomes more informative.

Although there have been many studies in economic literature on bounded rationality, studies on interaction between fully and boundedly rational agents are limited in number. To our knowledge, all these studies are concerned with how fully rational agents can take advantage of boundedly rational agents (see Rubinstein 1993, Piccione and Rubinstein 2003, Eliaz and Spiegler 2006). The main novelty of our paper lies in our team approach. Both types of agent work together to decrease the inefficiency caused by bounded rationality since their preferences are perfectly aligned.

Another interpretation of our model could be done by using the concept of interpreted signals rather than bounded rationality. This concept, introduced by Hong and Page (2009), is based on the assumption that people filter reality into a set of categories. Hong and Page call the predictions that agents make about the value of the variable of interest by using their own categories as interpreted signals. They state that "... two agents' signals differ if the agents rely on different predictive models. This can only occur if agents differ in how they categorize or classify objects, events or data, if agents possess different data, or if agents make different inferences." In our model, the interpreted signal of the boss and his namesake differ due to their different ways to categorize the real world. The action taken by the namesake may cause a loss for the boss because the product bought by his namesake might be less valuable for the boss than its alternative. In order to decrease this expected loss, the boss manipulates the information he sends to his namesake. Moreover, it might be possible to decrease the amount of manipulated information, since the boss might infer the categorization of his namesake during their interaction.

The organization of the paper is as follows. Section 2 describes our two-period toy model, gives the details of learning mechanism and presents results obtained using myopic approach. Section 3 recaptures the results using a farsighted approach and Section 4 concludes.

2. A Toy Model

We consider a two-period decision problem, in which a fully rational boss wants to buy a product in each period. There are two markets having a huge number of alternatives for the product. The first market is more complex than the second one. A possible explanation for this could be that the first market is a legal market with many regulations and the second market is an illegal one with less complexity. The boss can only observe the products in the first market but cannot perform any transaction since he does not have access to neither of the markets. Therefore he asks his boundedly rational namesake, who has access to both markets, to compare products in the two markets and buy from one. However, cognitive limitations of the namesake do not allow him to fully understand the complex (first) market. Being aware of his limitations, the boundedly rational agent categorizes the price space for the first market to simplify the decision process and uses the representatives of his categories in order to

compare the prices of the two markets. The objective of the boss is to minimize the expected loss due to the cognitive limitations of his namesake.

It is common knowledge that the boss is fully and the namesake is boundedly rational. It is also known by both parties that the bounded rationality of the namesake is due to his limited ability in understanding the first market. It should be noted that for simplicity we consider only a single number (price) for a product, but in fact this is a combination of many elements, like the type, quality, brand, and age of the product, length of the warranty, payment arrangements and service fees. It is the multiplicity of such items that makes the namesake unable to fully understand the first market. However, the number of elements that are embedded in prices of the second market is less than those of the first market. There are no warranties, no payment arrangements and no service fees, for example. This is what makes the first market more complicated than the second market. Being aware of his limitation, the namesake fully trusts his boss. This is because he knows that their preferences are perfectly aligned and that the boss is fully rational, i.e., that the boss does not have any limitations in understanding the market. Furthermore, the namesake is aware of the fact that the boss may lie to him. However he knows that the reason for this is not that the boss wants to take advantage of him but he may do so in order to improve the outcome. Finally, the boss knows that his namesake fully trusts him.

In the first period, the boss observes the price on the first market, p_1^1, and then reports a price to his namesake, p^1 (not necessarily the observed one). Receiving the report, the namesake understands to which category the reported price belongs. Then he compares the representative of that category with the price on the second market, p_2^1, and decides from which market to buy. Note that he may take a non-optimal action since he uses the representative instead of the realized price for the product in the first market. Finally, he informs his boss about the price on the second market. Therefore, the boss is able to understand whether the decision was optimal or not.

At the beginning of the second period, the boss updates his beliefs about the namesake's categories by looking at the realized prices on both markets and the action of the namesake. Then the first period is repeated. The notations used for the second period are as follows: p_1^2 stands for the realized price on the first market, whereas p_2^2 is the price on the second market, and p^2 is the reported price.

We assume that prices on both markets are independent and distributed uniformly on unit interval [0,1]. There are three possible types for the namesake. All types use two categories, namely, they all partition the price space in two. In order to do that they choose a cutoff price level. Prices lower than the cutoff level belong to the first category (low) and prices higher than the cutoff belong to the second category (high). The representative of each category which is used to make comparison is the median of that category. Types differ in their choices of cutoff price level. Type-1 uses 1/2 as the cutoff level and the representative price of his low category is 1/8, whereas it is 5/8 for his high category. Type-2 uses 1/2 as the cutoff level, thus 1/4 and 3/4 are the representatives for his low and high categories, respectively. Finally, type-3 who uses 3/4 as the cutoff level has 3/8 and 7/8 as the representatives for his low and high categories, respectively. The prior belief of the boss is that all types are equally likely.

The objective of the boss is to minimize the expected loss caused by bounded rationality. He can send four different kinds of reports to his namesake. These reports and their corresponding perceived categories for each type are given in Table 1. For example, if the boss chooses to report a price in [0,1/2], then all the types consider their low categories, and use 1/8, 1/4, 3/8 as representative, respectively.

Table 1 - Action Space

	Type-1	Type-2	Type-3	Used prices
$p_1^1 \in \left[0, \dfrac{1}{4}\right]$	L	L	L	$\left\{\dfrac{1}{8}, \dfrac{1}{4}, \dfrac{3}{8}\right\}$
$p_1^1 \in \left[\dfrac{1}{4}, \dfrac{1}{2}\right]$	H	L	L	$\left\{\dfrac{5}{8}, \dfrac{1}{4}, \dfrac{3}{8}\right\}$
$p_1^1 \in \left[\dfrac{1}{2}, \dfrac{3}{4}\right]$	H	H	L	$\left\{\dfrac{5}{8}, \dfrac{3}{4}, \dfrac{3}{8}\right\}$
$p_1^1 \in \left[\dfrac{3}{4}, 1\right]$	H	H	H	$\left\{\dfrac{5}{8}, \dfrac{3}{4}, \dfrac{7}{8}\right\}$

We consider a myopic approach in this section. That is, we assume that the boss is only concerned with the expected loss of the current period, not with the aggregate expected loss. A farsighted approach is considered in the following section. Table 2 shows the expected loss for each possible combination of price realizations on the first market (p_1^1) and actions taken by the boss.

Each number in bold gives the minimum expected loss for the relevant price realization. Under the myopic approach, the action that corresponds to each bold number is optimal for the relevant price realization. For example, if the boss observes a price on the first market that belongs to interval [0,1/8], he will report a price that belongs to interval [0,1/4]. At this point we make another assumption about the boss. We assume that he prefers to tell the truth whenever it is among the optimal actions. This assumption together with the fact that [0,1/8]⊂[0,1/4] (truth-telling is among optimal actions) imply that the boss reports the observed value in this case. However, if $p_1^1 \in$ [1/4,3/8] it is optimal to report $p^1 \in$ [0,1/4]. In this case, the reported price is less than the observed value (the boss under-states the price). The other case in which the boss lies is when $p_1^1 \in$ [5/8,3/4]. The optimal action of the boss, in this case, is to report $p^1 \in$ [3/4,1], i.e., he reports a price that is higher than the observed value (the boss over-states the price).

Table 2 - Expected Loss (common multiplier: $\dfrac{1}{6 \times 8^3}$)

Observed Price \ Report	$p^1 \in$ [0,1/4]	$p^1 \in$ [1/4,1/2]	$p^1 \in$ [1/2,3/4]	$p^1 \in$ [3/4,1]
$p_1^1 \in$ [0,1/8]	**9**	29	57	93
$p_1^1 \in$ [1/8,1/4]	**3**	15	35	63
$p_1^1 \in$ [1/4,3/8]	**3**	7	19	39
$p_1^1 \in$ [3/8,1/2]	9	**5**	9	21
$p_1^1 \in$ [1/2,5/8]	21	9	**5**	9
$p_1^1 \in$ [5/8,3/4]	39	19	7	**3**
$p_1^1 \in$ [3/4,7/8]	63	35	15	**3**
$p_1^1 \in$ [7/8,1]	93	57	29	**9**

From Table 2 we obtain the following reaction function:

$$R(p_1^1) = \begin{cases} report\ p^1 \in \left[0, \dfrac{1}{4}\right] & if\ p_1^1 \in \left[\dfrac{1}{4}, \dfrac{3}{8}\right], \\[2mm] report\ p^1 \in \left[\dfrac{3}{4}, 1\right] & if\ p_1^1 \in \left[\dfrac{5}{48}, \dfrac{3}{4}\right], \\[2mm] report\ true\ price & otherwise. \end{cases} \qquad (1)$$

Under-statement occurs only if $p_1^1 \in$ [1/4,3/8] and receiving this report all types use their low (L) categories (see Table 1). However, if $p_1^1 \in$ [1/4,3/8] and the boss reports the true value of the price rather than under-stating, type-1 uses his high (H) category whereas type-2 and 3 stick to their low (L) categories. So, it is only type-1 who is affected by under-statement. Since the boss prefers to tell the truth whenever it is among the optimal actions and under-statement does not affect other types, the boss uses this strategy only if type-1 is among possible types when the observed price belongs to interval [1/4,3/8].

Over-statement occurs only if $p_1^1 \in$ [5/8,3/4]. By the same reasoning as above, over-

statement affects only type-3, not others. Therefore, the boss uses this strategy only if type-3 is among possible types when $p_1^\cdot \in$ [5/8,3/4]. Otherwise, he prefers to report the truth.

Figure 1 represents the reaction function of the boss. Here, we can observe that the behavior of the boss is symmetric around 1/2. The arrow on the left represents under-statement and in case of under-statement only type-1 switches category, whereas the arrow on the right represents over-statement and only type-3 switches category in this case. As noted earlier, these types behave symmetrically which results in symmetric behavior of the boss.

Figure 1 - Reaction Function
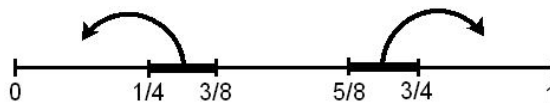
At the end of the first period, the boss updates his beliefs by looking at the prices realized in both markets and the action taken by the namesake. To see how this works let us consider the following example. Say, $p_1^1 \in$ [0,1/8]. $p_2^1 \in$ [1/8,1/4]. Given the price on the first market, the boss reports the true value (see Figure 1). In this case, the representative price is 1/8 for type-1, 1/4 for type-2 and 3/8 for type-3. The namesake, comparing the representative price with the price on the second market, buys the good from the first market if he is of type-1 and buys from the second market otherwise. In such a situation, the namesake's action reveals whether he is of type-1 or not, and the boss updates his belief accordingly.

Figure 2 summarizes the learning process at the end of period-1. Numbers in bold stand for the numbers of possible types of the namesake. The boss starts with three possible and equally likely types. The probability that he learns the exact type, i.e., that the number for possible types reduces to 1, at the end of the first period is 3/32=0.09375. The probability that the number of possible types decreases to 2 (elimination of one type) is 3/16=0.1875, and finally the probability that the boss learns nothing is 23/32=0.71875.

Figure 2 - Learning Process, 1st Period
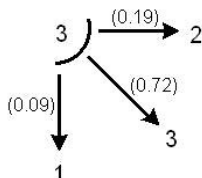
The boss starts the second period with updated beliefs. The objective is again to minimize the expected loss caused by bounded rationality. When type-1 is among possible types and the observed price on the first market in the second period (p_1^2) belongs to the interval [1/4,3/8], he uses the under-statement strategy described above. Furthermore, when type-3 is among possible types and $p_1^2 \in$ [5/8,3/4], he uses the over-statement strategy. In all the other cases he reports the true observed value. The reaction function for the second period coincides with the one for the first period (Figure 1) if both type-1 and type-3 are among possible types.

Figure 3 summarizes the learning process for the whole game. If the boss figures out the exact type of the namesake (arrives to node 1) at the end of the first period, there is nothing left to learn and he continues the second period with the relevant strategy. If he arrives to node 2 at the end of the first period, the learning process continues and he might either figure out the type and arrive to node 1 or not learn anything new and stay in node 2. If, at the end of the first period, he does not learn anything about the type (stays at node 3), there are three possibilities for the second period. He might figure out the exact type and arrive to node 1, or he might eliminate only one possible type and arrive to node 2, or he might not learn anything and stay at node 3. The overall probability that the boss figures out the exact type of the namesake by the end of the game is 0.19238, that he eliminates only one possible type is 0.29102 and that he does not learn anything is 0.51660.

Figure 3 - Learning Process, 2nd Period
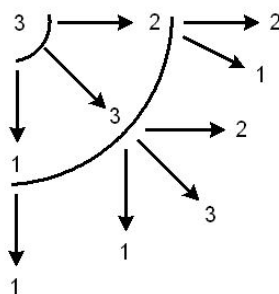
The transition matrix of the learning process is given in Table 3. It is a finite Markov Chain and has three ergodic states. According to the Theorem by Kemeny and Snell (1976), the probability after n steps that the process is in an ergodic state tends to 1, as n tend to infinity. This means that if the game is repeated for n periods the probability that the boss learns the exact type of the namesake tends to 1 as n gets larger.

Table 2 - Transition Matrix

possible types	{1,2,3}	{1,2}	{1,3}	{2,3}	{1}	{2}	{3}
{1,2,3}	0.71875	0.08333	0.02083	0.08333	0.04167	0.01042	0.04167
{1,2}	0	0.84375	0	0	0.07813	0.07813	0
{1,3}	0	0	0.75000	0	0.12500	0	0.12500
{2,3}	0	0	0	0.84375	0	0.07813	0.07813
{1}	0	0	0	0	1	0	0
{2}	0	0	0	0	0	1	0
{3}	0	0	0	0	0	0	1

The relationship between the number of periods and the probability of learning the exact type is given in Table 4. The probability increases in the number of periods, and it becomes almost 1 after 30 periods.

Table 3 - Number of periods/probability

n	p
5	0.46344
7	0.60419
10	0.75543
15	0.89388
20	0.95465
30	0.99178

A crucial point to be noted is that in this section we use a myopic approach to solve the optimization problem. The boss is concerned only with the expected loss of the period he is in, whereas under a farsighted approach, he considers the overall expected loss that is the sum of discounted future expected losses. However, both approaches yield the same results with the given available types. It follows from the fact that a manipulated message affects only one type, while other types stick to their category that they would consider if the message was not manipulated. In other words, a strategy that needs to be used in order to decrease the expected loss caused by one type does not conflict with the strategies that need to be used for other types. For example, the under-statement strategy is used whenever type-1 is among possible types. The fact that type-2 and/or type-3 are among possible types does not change this strategy, because it induces only type-1 to change his category, not the other types. Therefore, the boss can continue to use the reaction function given in Figure 1 even if he knows the exact type of the namesake. It should be noted that if he does so, he might report a manipulated price although reporting the true value is also among optimal actions. Even though this violates our assumption that the boss prefers truth telling whenever it is possible, it yields the same expected loss for the boss. This fact ensures that he can use the same reaction function for each period no matter if he is farsighted or myopic. In the following section we show that myopic and farsighted optimizations do not always coincide.

3. Farsighted Approach

In this section, we consider a farsighted approach and assume that the objective of the boss is to minimize the sum of discounted expected losses. We modify the model by changing the possible types. Here, we assume that the namesake has two possible types. The first type uses two categories (low and high) and his cutoff price level is 1/3. Therefore he uses 1/6 as the representative for low category (L) and 2/3 for high category (H). The second type uses three categories (low, medium and high) and his cutoff price levels are 1/3 and 2/3. Thus 1/6, 1/2 and 5/6 are the representative prices for his low (L), medium (M), and high (H) categories, respectively. The prior belief of the boss is that both types are equally likely.

In this setting, the boss can choose his strategy among three different types of action, which are represented in Table 5. If he reports a price belonging to [0,1/3], both types use low categories and 1/6 as representative price. If he reports $p^i \in$ [1/3,2/3], then type-1 uses his high category and 2/3 as his representative for the first market price, and type-2 uses his medium category and 1/2 as the representative ($i \in \{1,2\}$ represents the period). Finally, if the boss reports $p^i \in$ [2/3,1], both types will use high categories and type-1 uses 2/3 whereas type-2 uses 5/6 as representative price.

Table 4 - Action Space

	Type-1	Type-2	Used prices
$p^i \in \left[0, \dfrac{1}{3}\right]$	L	L	$\left\{\dfrac{1}{6}, \dfrac{1}{6}\right\}$
$p^i \in \left[\dfrac{1}{3}, \dfrac{2}{3}\right]$	H	M	$\left\{\dfrac{2}{3}, \dfrac{1}{2}\right\}$
$p^i \in \left[\dfrac{2}{3}, 1\right]$	H	H	$\left\{\dfrac{2}{3}, \dfrac{5}{6}\right\}$

We solve the optimization problem by backward induction. If the boss does not learn anything about the type of his namesake during the first period, he starts the second period with the belief that both types are equally likely. Following the same reasoning of the previous section, we get the following reaction function:

$$R(p_1^2 \mid type1 \ \& \ type2) = \begin{cases} report \ p^2 \in \left[0, \dfrac{1}{3}\right] & if \ p_1^2 \in \left[\dfrac{1}{3}, \dfrac{23}{60}\right], \\ report \ true \ price & otherwise, \end{cases} \tag{2}$$

where $R(p_1^2 \mid type1 \ \& \ type2)$ stands for the reaction function for the second period given that both type-1 and type-2 are among possible types. And the expected loss in this case is

$$E_2(L \mid type1 \ \& \ type2) = \frac{151}{17280}. \tag{3}$$

If the boss learns that his namesake is of type-1 during the first period, his reaction function for the second period is

$$R(p_1^2 \mid type1) = \begin{cases} report \ p^2 \in \left[0, \dfrac{1}{3}\right] & if \ p_1^2 \in \left[\dfrac{1}{3}, \dfrac{25}{60}\right], \\ report \ true \ price & otherwise, \end{cases} \tag{4}$$

and the expected loss in this case is

$$E_2(L \mid type1) = \frac{7}{576}. \tag{5}$$

Finally, if the boss starts the second period with the information that his namesake is of type-2, his reaction function in this period is to always report the true value. This follows from the fact that this type uses optimal categorization given the number of categories and the distribution of the price. In this case, the expected loss is

$$E_2(L \mid type2) = \frac{1}{216}. \tag{6}$$

Now, we move to the first period. If the boss, after observing the price on the first market, reports $p^1 \in [0,1/3]$ then both types use low category and 1/6 as representative price for the first market (see Table 5). Therefore, it is impossible for the boss to distinguish between the two types. In this case, the overall expected loss is

$$\int_{p_2^1}^{\frac{1}{6}} (p_2^1 - p_1^1) dp_2^1 + \delta \ E_2(L|type1 \ \& \ type2), \tag{7}$$

where $\delta \in [0,1]$ is the discount factor of the boss.

If the boss reports $p^1 \in [1/3, 2/3]$ then type-1 uses his high category and 2/3 as representative price for the first market, whereas type-2 uses his medium category and 1/2 as representative (see Table 5). In such a case, both types act in the same way conditional on the price realization of the second market being either lower than 1/2 or greater than 2/3. In the former case they both buy from the second, whereas in the latter case they buy from the first market. The two types take diverse actions only if $p_2^1 \in [1/2, 2/3]$; type-1 buys from the second and type-2 buys from the first market. Hence, with this strategy the probability that he boss figures out the type of his namesake is 1/6 and his expected loss is

$$\frac{1}{2}\int_{p_2^1}^{\frac{2}{3}} (p_2^1 - p_1^1) dp_2^1 + \frac{1}{2}\int_{p_2^1}^{\frac{1}{2}} (p_2^1 - p_1^1) dp_2^1 \tag{8}$$
$$+ \ \delta\left[\frac{5}{6} E_2(L|type1 \ \& \ type2) + \frac{1}{12} E_2(L|type1) + \frac{1}{12} E_2(L|type2)\right],$$

Finally, if the reported price is such that $p^z \in [2/3,1]$ then both types consider their high category and use 2/3 and 5/6 as representative price, respectively (see Table 5). In this case,

the two types take different actions only if the price realization on the second market belongs to [2/3,5/6], which occurs with probability 1/6. Hence, the expected loss in this case is

$$\frac{1}{2}\int_{p_1^1}^{\frac{2}{3}}(p_2^1 - p_1^1)dp_2^1 + \frac{1}{2}\int_{p_1^1}^{\frac{5}{6}}(p_2^1 - p_1^1)dp_2^1$$
$$+ \delta\left[\frac{5}{6}\,E_2(L|type1\ \&\ type2) + \frac{1}{12}\,E_2(L|type1) + \frac{1}{12}\,E_2(L|type2)\right],$$

(9)

Inserting (3), (5) and (6) into (7), (8) and (9) we derive the reaction function of the boss as follows:

$$R(p_1^1) = \begin{cases} report\ p^1 \in \left[0,\frac{1}{3}\right] & if\ p_1^1 \in [0,a], \\ report\ p^1 \in \left[\frac{1}{3},\frac{2}{3}\right] & if\ p_1^1 \in \left[a,\frac{2}{3}\right], \\ report\ p^1 \in \left[\frac{2}{3},1\right] & otherwise, \end{cases}$$

where a$=\frac{2760-\delta}{7200}$.

Taking into account the assumption that the boss prefers to tell the truth whenever possible, the above reaction function becomes

$$R(p_1^1) = \begin{cases} report\ p^1 \in \left[0,\frac{1}{3}\right] & if\ p_1^1 \in \left[\frac{1}{3},a\right], \\ report\ true\ price & otherwise. \end{cases}$$

(10)

The reaction function (10) depends on the discount factor δ. This implies that the optimal strategy of the boss when he is myopic (δ =0) is different than when he is farsighted (δ >0). This follows from the fact that a farsighted boss wants to invest in learning the type since he is concerned with his future losses as well as the current one. The difference here is quite small because the game we consider has only two periods. When the number of periods increases, not only the occasions in which he can learn about his namesake but also the value of knowing the type grows for a farsighted boss. As a result, the difference becomes important.

4. Conclusion
We have constructed a model in order to study the interaction between fully and boundedly rational agents when they are in a team and have perfectly aligned preferences. In an environment with abundance of product information (type, quality, brand, age of the good, length of the warranty, payment arrangements and service fees), boundedly rational agents are having difficulties in making decision due to their cognitive limitations. In order to simplify the situation, they try to group events, objects or numbers into categories. In our model we consider a boundedly rational agent who partitions the price space into connected sets. The decision made by this agent might be non-optimal in some cases, since he is using categories instead of realized prices and regards prices belonging to the same category as equal.

Assuming different types for the boundedly rational agent that differ in categories used, we show that during his interaction, the fully rational agent may learn about the type of the boundedly rational agent. He can improve the outcome by using this additional information. The probability that he learns the type of the boundedly rational agent increases in the length of this interaction, whereas it decreases in the number of available types.

Finally, we show that myopic and farsighted approaches yield different results, depending on the available types. This difference is caused by the tradeoff between investing in learning the agent's type with the aim of decreasing future losses and minimizing the current period's expected loss.

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