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Publishing

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***Journal of Administrative
Sciences and Technology***

*Vol. 2012(2012), Article ID
693619, 259 minipages.*

DOI:10.5171/2012.693619

www.ibimapublishing.com

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**Antecedents to Consumer
Ethnocentrism: A Fuzzy
Logic-Based Analysis
Study**

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Abstract

This study empirically examines a segment of consumers within the Jordanian society who

express high ethnocentric tendencies towards domestic products using fuzzy logic technique. MATLAB® ANFIS has been employed to model the

relationships between three inputs (conservatism, dogmatism and world-mindedness) and one output (consumer ethnocentrism). The results

of this research conclude that Sugeno type fuzzy model has the ability to predict precisely consumers ethnocentric tendencies levels based on

their socio-psychological variables. Overall, fuzzy logic can improve the research of consumer ethnocentrism and can illuminate uncovered sides

in the area of consumer
ethnocentrism.

Keywords: Consumer
ethnocentrism, Fuzzy logic,
Socio- psychological
variables

Introduction

Literature Review

The globalization of markets has changed the

competitive conditions
facing organizations
(Wiersema and Bowen,
2008).Over the past two
decades international
investment activities have

increased extraordinarily
(Weng, et al 2010).

Recently, global marketing
activities have increased
astonishingly due to the
technical and

communication
developments (Chunget al
2009). Consumers' bias
towards their national
products is a significant
determinant of local

product purchase behavior (Josiassen, 2011). Indeed, exploring consumers' attitudes towards domestic and foreign products can help local and global

marketers to conduct more effective local and global marketing strategies (Chéron and Hayashi, 2001). Despite the sharp increase in foreign made

products availability all around the world, little research focused on this interesting development (Lim and Darley, 2009). The increased consumer

awareness of foreign cultures, global markets and foreign brands has increased the importance of studies that explore consumer ethnocentric

tendencies (Nijssen and Herk, 2009). In this context, the concept of consumer ethnocentrism can help marketers to conduct effective marketing

strategies. Organisations and companies, in fact, need to consider the level of consumer ethnocentrism among consumers before launching their products in

foreign countries (Phau and Chan, 2003). Ethnocentrism is a purely sociological concept that distinguishes between in-groups and out-groups (Simp, 1984). It

refers to blind acceptance to the in-group and blind rejection to out groups. It leads individuals to overstate everything in their own culture that

differentiates them from others (Al Ganideh, 2010). Therefore, ethnocentrism may cause contempt to other people and their cultures. It is clear that

most individuals view their own group as the centre of the universe and evaluate other cultural groups from their perspective (Yu and Albaum, 2002).The earliest

leading research on
consumer ethnocentrism
was conducted by Shimp
and Sharma in 1987. The
researchers define
consumer ethnocentrism

as: 'The beliefs held by the consumers about the appropriateness, indeed morality, of purchasing foreign made products' (p.240). Shimp and Sharma

applied ethnocentrism to the study of marketing and consumer behaviour. They relate the term 'consumer ethnocentric tendencies' to consumers' beliefs related

to the appropriateness and morality of purchasing foreign made products (Klein et al (1998). The concept of consumer ethnocentrism was

developed to capture consumer emotions related to purchasing foreign made products (Shimp, 1984). Bruning (1997) argues that national loyalty and

consumer ethnocentrism effects are the outcomes of group behaviour and initiate from group communication. According to Shimp and Sharma

(1987), consumer ethnocentrism gives the individuals a sense of identity; feelings of belonging to the in-group.

Ethnocentric tendencies in consumers are a part of a constellation of social, psychological and demographic influences (Sharma et al 1995). Thus,

it offers individuals a sense of distinctiveness, feelings of belongingness and a justification of why some purchase behaviours are suitable, or unsuitable to

the group (Witkowski and Beach, 1998). Nevertheless, it is critical to recognize that consumer ethnocentrism tendencies may change due to time,

historical events, economic crises or political status (Yu and Albaum, 2002).

Generally, consumers become more ethnocentric towards purchasing local

products during crisis time
(Al Ganideh, 2010).

The consequences of
consumer ethnocentrism
(whether or not

ethnocentrism leads
consumers to purchase
their national products)
have been well researched
(i.e Sharma et al 1995;
Klein et al 1998; Kim and

Pysarchik, 2000;
Huddleston et al 2001; Orth
and Firbasova, 2003).
However, the sources of
consumer ethnocentrism
phenomenon have not been

well acknowledged (Al Ganideh, 2010). It is crucial to be aware of what lead consumers to be ethnocentric. This study raises awareness of the

importance of examining
socio- psychological
antecedents to consumer
ethnocentrism in different
countries and cultures.
Earlier, Shimp and Sharma

(1987) developed a scale to measure consumers' ethnocentric tendencies (CETSCALE) for purchasing foreign-versus American made products. Shimp and

Sharma (1987) described their scale as a measure of tendency rather than attitudes, since attitude proposes a superior degree of objectivity specifically

than the CETSCALE is intended to capture. The development and international application of the CETSCALE is a vital contribution to consumer

research. The CETSCALE is the most widely used instrument to examine consumer ethnocentric tendencies (Klein et al 1998). It became a part of

any company's tracking studies of consumer attitudes in domestic and foreign markets (Al Ganidehet al 2007).
International companies

and organizations could use the CETSCALE as part of their periodic tracking studies (Shimp and Sharma, 1987). However, marketers might find the CETSCALE

less relevant and useful
than giving more focused
and precise information
that provide specific insight
concerning consumer
aversion towards a

particular country (Klein et al 1998).

Consumer Ethnocentrism and Socio-psychological Antecedents

Overall, there is a dearth of studies examining socio-

psychological variables as antecedents to consumer ethnocentrism. Moreover, the results of previous empirical studies regarding the influences of socio-

psychological antecedents
on consumer
ethnocentrism are
inconsistent. Recently, a
number of researchers
have concentrated on

exploring patriotism,
nationalism and
internationalism as
antecedents of consumer
ethnocentrism (i.e
Balabaniset al 2001; Lee et

al 2003; Al Ganideh et al 2007). The current study examines the influence of socio-psychological antecedents; namely, dogmatism, conservatism

and world-mindedness on
consumer ethnocentrism.
Caruana and Magri (1996)
define dogmatism as a
personal attribute that
differentiate reality in black

and white. Caruana and Magri (1996) found in Malta that consumers with higher levels of dogmatism express higher levels of consumer ethnocentrism.

Dogmatic individuals are those who hold beliefs and disbeliefs that are rigidly demarcated within the cognitive system (Crowson, 2009, p.265). Sharma et al

(1995, p.28) define conservatism as 'a tendency to cherish traditions and social institution that have survived the test time and to introduce changes only

occasionally, reluctantly
and gradually’.

Conservatism has become
connected in the U.S. to the
political opinions that
defend liberty, good

character, strong families
and the importance of
religion (Blitz, 2010, p.61).
Overall, a devotion to the
precedent is the core of

conservatism (Strauss,
2011).

A positive relationship was
found between
conservatism and

consumer ethnocentrism in South Korea (Sharma et al 1995). Ruyter et al (1998) found a positive significant influence for conservatism on consumer

ethnocentrism for
consumers from the
Netherlands and Korea.

Moreover, in France, Javalgi
et al (2005) concluded that
conservatism has a

significant influence on
consumer ethnocentrism.
Rawwas and Rajendar
(1996) argue that it is
essential for international
marketers to give attention

to consumers' ideologies
such as world-mindedness.
World-mindedness does
not mean cultural
openness. A world-minded
person is one whose most

important reference group is mankind, rather than Americans or English or Chinese (Nijssen and Douglas, 2008). It is a state of mind that uses

humankind as reference group (Shankarmahesh, 2006). Rawwas and Rajendar (1996) indicated that world-minded consumers perceive higher

quality for foreign products. Consumers should not interact with peoples from other cultures to be world-minded. Nevertheless, they just have

to have positive attitudes towards problems of the humanity. Balabanis et al (2001) found that world-mindedness has no significant influence on

consumer ethnocentrism
for two samples from
Turkey and the Czech
Republic. However, Lee et
al (2003) concluded that
world-mindedness has

negative significant influence on consumer ethnocentrism in the U.S.A. Surprisingly, Al Ganideh et al (2007) found that world-mindedness has positive

significant influence on consumer ethnocentrism for a student sample in Jordan. Overall, the advantages of examining socio- psychological

antecedents such as
dogmatism, conservatism
and world-mindedness to
consumer ethnocentrism
lie in the opportunities of
segmenting consumers

based on their favorable
and unfavorable disposition
to foreign products and
could help to know more
regarding the sources of
consumer ethnocentrism

phenomenon (Caruana and Magri 1996; Ruyter et al 1998; Shankarmahesh, 2006; Al Ganideh et al 2007). It is known that differences between

consumers in different countries still exist due to diversities in culture. The concept of consumer ethnocentrism can help marketers to differentiate

markets and strategies and to position their products very well domestically and globally. Overall, it is dangerous for domestic and global marketers to

suppose that consumers all around the world are similar. Nevertheless, they need to know more about consumers and their attitudes all around the

world. Yet, this research is the first that offers those interested in the area of consumer ethnocentrism all around the world more information and

understanding about
consumer ethnocentrism
concept in Jordan. This
research aims to examine
socio- psychological
variables; namely,

dogmatism, conservatism
and world mindedness as
antecedents to consumer
ethnocentrism for
Jordanian consumers.

Methodology

Generally, fuzzy logic can improve the study in the area of customer preferences. The

application of fuzzy logic theory to consumer behavior research can improve the research in the area of consumer ethnocentrism (Liu, 2009).

Enache (2010) argues that fuzzy logic has started to help marketers and managers to probe new insights in their data. In this context, Al Ganideh et al

(2011) indicated that fuzzy logic can help in developing the research of consumer ethnocentrism by giving accurate insights to international marketers

regarding every single customer ethnocentric tendencies. To examine the influence of socio-psychological variables; namely, dogmatism,

conservatism and world-mindedness on consumer ethnocentrism, a survey was conducted focusing on the Jordanian consumers. Jordanian consumers have

a different culture and lifestyle to their American and European counterparts who have been mainly examined in earlier research (i.e. Caruana and

Magri, 1996; Kim and Pysarchik, 2000; Javalgi et al 2005). The respondents were asked to answer a modified 17-item 5-point Likert format CETSCALE

(Shimp and Sharma, 1987)-
Jordanian modified version.
Moreover, they were asked
to answer 7-item 5-point
Likert format Rawwas and
Rejendran (1996) world-

mindedness scale and 5-item 5-point Likert format Bruning et al (1985) dogmatism scale. These two scales were used in marketing studies. To

measure conservatism, and due to the specialty of the Jordanian society, the respondents were asked to answer 4 item 5-point Likert format related to

tribes in Jordan, tribal law, honor killing and the role of women in the political life in Jordan developed by the researchers based on open questions. The Cronbach's

alpha measure of internal consistency was carried out to assess the overall reliability of the used scales. All used scales have been found very reliable as

Cronbach's Alpha values have exceeded 0.70 for the four scales. The recommended minimum acceptable level of reliability for Cronbach's

alpha is 0.60, using Hair et al (1998). Out of 352 questionnaires distributed to random Jordanian shoppers in 3 main market areas in Irbid City (north of

Jordan); Amman City (Centre of Jordan) and Karak City (south of Jordan), 272 were usable. Questionnaires with substantial missing data

were excluded (Sekaran and Bougie, 2010). Data has been collected in October and November 2009.

Pecher and Tregear (2000) criticized previous country-

of-origin studies as many of them used students as samples and preferred to reach a broad profile of respondents by collecting data from major sites in city

centers such as busy shopping streets.

Analysis and Discussion

Unquestionably, fuzzy logic can improve the research of

consumer ethnocentrism
and can illuminate
uncovered sides in the area
of consumer
ethnocentrism. Fuzzy logic
has been adopted to

analyze the data in this study. The study is the first to apply fuzzy logic on a consumer ethnocentrism research. However, previous studies in the field

of consumer ethnocentrism
used traditional statistical
techniques to examine the
nature of relationships
between socio-
psychological variables and

consumer ethnocentrism. Fuzzy logic has been used in large numbers of applications since it was first proposed by Zadeh in 1965. It is important to

bear in mind that Zadeh has introduced a new methodology in defining notations that cannot be defined precisely. In a classical $\{0, 1\}$ set, an object

can be either a member of the set or not a member of the set. However, in fuzzy sets defined by Zadeh (1965) objects can belong to the set with different

degrees of membership.
That means any number in
the interval $[0, 1]$ where 0
denotes that the object
does not belong to the set
at all, and 1 denotes that

the object belongs completely to that group. Overall, there are four main components of a fuzzy system; namely, fuzzification module,

inference engine,
knowledge base and
defuzzification).

Fuzzification module
converts a crisp input to its
corresponding fuzzy value.

In addition, inference engine (rule-based system) applies fuzzy rules to compute the output contributed by each rule individually. Moreover,

knowledge base contains
all the rules and
membership functions.
Furthermore,
defuzzification module
combines the several rules

outputs into one crisp value and then denormalizes the output value if needed.

MATLAB® ANFIS, a training mechanism for

Sugeno-type fuzzy inference system, has been used in the current study to model the relationship between three inputs dogmatism, conservatism

and world-mindedness and one output ethnocentrism (Figure 1). Subtractive clustering was used to generate the fuzzy inference system where the

clustering parameters were chosen as the following range of influence (0.5), squash factor (1.25), accept ratio (0.5) and reject ratio (0.15). Depending on the

values of these three parameters, an 11 rules fuzzy inference system (FIS) was generated with 9 membership functions for

each variable of inputs and the output.

The following are the specifications of the used fuzzy inference system:

type: 'sugeno' and Method:
'prod' or Method: 'probor'
defuzz Method: 'wtaver'
imp Method: 'prod' agg
Method: 'max' input: [1x3
struct] output: [1x1 struct]

rule: [1x9 struct] trndata:
[272x4 double]. A first
order Sugeno type fuzzy
model has three inputs (x,
y, and z) and one output (f)

and it has rules of the following form:

If x is a_1 and y is b_1 and z is c_1 **Then** f is $h_1x + i_1y + j_1z + r$

Fig1.Fuzzy System

**Please See Fig1. in Full
PDF Version**

After training the system with MATLAB® ANFIS (number of epochs is 1000), the following membership functions are obtained (Figure 2):

Fig2.Membership Functions

**Please See Fig2. in Full
PDF Version**

Table 1 contains the output membership functions parameters.

Table 1: Output Membership Functions Parameters

**Please See Table 1 in Full
PDF Version**

Figures 3(a), 3(b) and 3(c) describe the nature of the relationships between socio- psychological variables; namely, dogmatism, conservatism

and world-mindedness and
consumer ethnocentrism
individually.

Fig3 (a).Dogmatism and Consumer Ethnocentrism Relationship

**Please See Fig3 (a). in Full
PDF Version**

Fig3(b).Conservatism and Consumer Ethnocentrism Relationship

**Please See Fig3(b). in Full
PDF Version**

**Fig3(c).World-
mindedness and
Consumer Ethnocentrism
Relationship**

**Please See Fig3(c). in Full
PDF Version**

Figure 3(a) shows that there is a proportional relationship between consumer ethnocentrism and dogmatism which implies that people with

high level of dogmatism will show high ethnocentric tendencies. Also, it is clear from Figure 3(b) that a proportional relationship is found between

conservatism and
ethnocentrism implying
that conservative
consumers have high
ethnocentric tendencies
towards their local

products. On the other hand, Figure 3(c) shows an inverse relationship between world-mindedness and consumer ethnocentrism. Consumers

who have emotional support for the problems of humanity express low consumer ethnocentrism towards purchasing their domestic products.

Regression results have confirmed the abovementioned results (Table 2). The results show that dogmatism and conservatism have

significant positive influence on consumer ethnocentrism. However, it is clear that world-mindedness has negative significant influence on

consumer ethnocentrism.
Conservatism has the
strongest influence on
consumer ethnocentrism.

Table 2: Regression on Consumer Ethnocentrism

**Please See Table 2 in Full
PDF Version**

Figures 4(a), 4(b) and 4(c) represent three dimensional graphs that describe the effect of two inputs at a time on consumer ethnocentrism.

**Fig4 (a).Dimensional
Graph (Dogmatism,
Conservatism and
Consumer
Ethnocentrism)**

**Please See Fig4 (a). in Full
PDF Version**

**Fig4 (b).Dimensional
Graph (Dogmatism,
World-mindedness and
Consumer
Ethnocentrism)**

**Please See Fig4 (b). in
Full PDF Version**

**Fig4(c).Dimensional
Graph (Conservatism,
World-mindedness and
Consumer
Ethnocentrism)**

**Please See Fig4(c). in Full
PDF Version**

It can be concluded from Figures 4(a), 4(b) and 4(c) that consumers with high level of dogmatism and high level conservatism will express high ethnocentric

tendencies. However, for consumers with high dogmatism level, high ethnocentric tendencies are expected regardless of the level of world-mindedness

they show. Moreover, it is expected for highly conservative consumers to show high ethnocentrism regardless of their world-mindedness level. One of

the best benefits of this Sugeno type fuzzy model is that one can predict the degree of ethnocentrism of a certain consumer by simply entering two of the

examined three inputs in this study dogmatism, conservatism and world-mindedness. Moreover, one can predict using the Sugeno model for two

different costumers who has higher ethnocentric tendencies simply by having only three inputs for those two consumers.

**Fig 5. Inputs and Output
for a Particular Consumer
(Example 1)**

**Please See Fig5. in Full
PDF Version**

As an example of the
aforementioned case, see
the following situation.
Figure 5 illustrates the
inputs and output for a
particular consumer. Based

on the consumer
dogmatism, conservatism
and world-mindedness
levels and using the Sugeno
type fuzzy model, the
consumer should show

high ethnocentric feelings
and score roughly 103 out
of 119 on a 17-item
CETSCALE. The real
CETSCALE value for this
consumer based on Sugeno

type fuzzy model is 113
which is very close to
103. Figure 6 is related to
another consumer with
different inputs of socio-
psychological variables

(dogmatism, conservatism and world-mindedness).

Employing Sugeno model, one can predict based on the consumer's level of dogmatism, conservatism

and world-mindedness that
the consumer will express
low consumer
ethnocentrism and will
score around 47.6 out of
119 on a 17-item

CETSCALE. The actual
CETSCALE score is roughly
identical to what the model
predicts, the consumer has
scored 44 on a 17-item
CETSCALE.

**Fig6.Inputs and Output
for a Particular Consumer
(Example 2)**

**Please See Fig6. in Full
PDF Version**

Conclusions

Global marketers should increase their understanding of how consumers in different

countries perceive foreign products. The concept of consumer ethnocentrism provides marketers with better understanding of why consumers prefer to

buy domestic or foreign products. However, companies that want to go globally should not undervalue consumer ethnocentric tendencies.

Socio- psychological variables could help marketers to know more regarding the sources of consumer ethnocentrism phenomenon. Fuzzy model

has approved to be beneficial and accurate in predicting the consumers' ethnocentric tendencies level based on their socio-psychological variables.

The results of this study are promising and can help international marketing researchers to predict consumers' ethnocentrism based on their socio-

psychological variables. It can be concluded that the impact of socio-psychological variables on consumer ethnocentrism may be

country or culture specific.
Dogmatism and
conservatism were found to
have a significant positive
influence on consumer
ethnocentrism; however,

world-mindedness has a negative significant influence. Conservatism has the strongest influence on consumer ethnocentrism.

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Appendix (Constructs and Items Used)

**CETSCALE (Shimp and
Sharma, 1987)**

Jordanian people should
always buy Jordanian-made
products instead of
imports.

Only those products that are unavailable in Jordan should be imported.

Buy Jordanian-made products, keep Jordan working.

Jordanian products, first,
last and foremost.

Purchasing foreign-made
products is un- Jordanian.

It is not right to purchase foreign products, because it puts Jordanians out of jobs. A real Jordanian should always buy Jordanian-made products.

We should purchase products manufactured in Jordan instead of letting other countries get rich off us.

It is always best to purchase Jordanian products.

There should be very little trading or purchasing of

goods from other countries
unless out of necessity.

Jordan should not buy
foreign products, because
this hurts Jordanian

business and causes
unemployment.

Curbs should be put on all
imports.

It may cost me in the long run but I prefer to support Jordanian products.

Foreigners should not be allowed to put their products on our markets.

Foreign products should be taxed heavily to reduce their entry into Jordan.

We should buy from foreign countries only those

products that we cannot obtain within our own country.

Jordanian consumers who purchase products made in

other countries are responsible for putting their fellow Jordanians out of work.

Conservatism

Jordanian tribes should continue to have a central role in Jordanians' life.

Jordanians should respect
and follow tribal laws when
it is needed.

I do not support the new
Jordanian Government laws

which increase punishment
on Jordanians who do
honor killing.

Women in Jordan should not be appointed in top country positions.

**World-mindedness
(Rawwas and Rejendran,
1996)**

I find imported goods more desirable than domestically produced products.

All national governments
should be abolished and
replaced by one central
government.

It would be better to be a citizen of the world than of any particular country.

My quality of life would improve if more imported goods were available.

Immigration should be controlled by an international organization rather than by each country independently.

Where a good is produced does not affect my decision to purchase that item.

Jordan should permit foreigners to immigrate

here even if it lowers our
standard of living.

Dogmatism (Bruninget *al* 1985)

I am not very insistent in an argument.

I do everything in my
power in order not to have
to admit defeat.

People find it difficult to
convince me that I am

wrong on a point no matter
how hard they try.

I would get into a long
discussion rather than
admit that I am wrong.

When someone opposes me on an issue, I usually find myself taking an even stronger stand than I did at first.