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ABSTRACT

Purpose: Scholars recognize that international marketing effectiveness requires adapting to cultural values, and at the same time, paradoxically, acknowledge the possibility of cultural convergence. The study takes the context of Puerto Rico as a United States territory to reconcile these two propositions by analyzing culture and gender's influence on apparel purchase.

Methodology: Via multiple regression analysis, the study considers seasonality as a factor of apparel purchase patterns, developing a consumer behavior model for the apparel industry.

Findings: Results confirm that culture influences purchase behavior, an influence moderated by gender. Additionally, they show that seasons and special occasions are strong predictors of apparel purchase patterns.

Research implications: The findings assert the claims of cultural convergence, yet preserve the notion that cultural values are reflected in patterns of consumer behavior in the case of apparel.

Practical implications: The study develops highly explanatory models indicating that Puerto Rico expenditure reflects cultural patterns of special occasions, but overshoots expectations for its United States counterpart.

Value: The results show that Puerto Rico has appropriated several United States cultural aspects (e.g. special holidays), which are expressed differently as reflected by apparel purchase behavior, supporting the notion that Puerto Rico should be treated as an international market. The study demonstrates that cross-cultural studies may be robust in absence of available Hofstede´s dimensions for a country.

Keywords: apparel sales, purchase patterns, convergence, gender, seasonality, regression analysis

INTRODUCTION

Some researchers argue that globalization and new technology will result in culture and consumer preference convergence ("Convergence Theory" or "Convergence") (Assael, 1998; Bullmore, 2000; Czinkota and Ronkainen, 1993; Jain, 1987; Levitt, 1983). However, this argument presumes that consumer behavior is rational, a notion that De Mooij (2003) discredited as it places consumers in a cultural vacuum. Moreover, some researchers argue that no empirical evidence for globalization exists, as markets have not shown convergence with regard to taste or price-minded consumer behavior (Usunier, 1997). Not only does Convergence deny culture's effect on consumer consumption, but also that of other variables such as institutional and social structures (Sandicki and Ger, 2010). Addressing this gap, this study analyzes culture and gender's influence on United States and Puerto Rico apparel[1] purchase, considering seasonality's impact.

Puerto Rico and the United States serve as an example of two countries[2] that could not be more politically and economically linked, and that, under Convergence Theory, should meet in terms of culture and consumer behavior as exemplified by purchase patterns. To test Convergence, we studied the United States and Puerto Rico to assess what determines the timing and size of apparel purchase patterns. If Convergence holds, then we should not find a significant difference in the United States and Puerto Rico's apparel purchase pattern.

In terms of political relationship, Puerto Rico has been associated with the United States since 1898 in an evolving economic and political relationship that intensified from 1917 to 1951 into Puerto Rico's Commonwealth, a status that currently links both countries through citizenship, currency, market, official language, among other commonalities (Christoforo, 1991).

[1] Apparel includes clothing and accessories, such as belts.
[2] For purposes of this study, we consider Puerto Rico a country in the international market as a proxy for culture.

While for purposes of international engagements, Puerto Rico may be considered as a country, Puerto Rico nevertheless functions as an American state, though remaining an unincorporated United States territory (Caribbean Business, 2015).

Pertaining to the economic relationship, the United States is Puerto Rico's main trading partner, accounting for 90 percent of Puerto Rico's exports and 55 percent of its imports (Economy Watch, 2010). In particular, clothing is one of the industries wherein United States firms have greatly invested since the 1950's (BST International Bank, Inc., n.d.), as demonstrated by the presence of American clothing stores, such as American Eagle Outfitters, Old Navy, and Abercrombie & Fitch, in Puerto Rico.

Furthermore, researchers have found that climate affects four basic purchasing decisions: what, where, when and how much consumers purchase (Stulec, 2013). Puerto Rico is located in the Caribbean, which has a constant summer, with average temperature ranging from a low of 70.4°F to a high of 87.6°F (National Oceanic and Atmospheric Administration, 2013), whereas the United States' annual average temperature ranges from a low of 49.4°F to a high of 62.9°F (Weatherbase, n.d.). Despite Puerto Rico's one-season climate, apparel merchandising follows all seasons (spring, summer, fall and winter), suggesting cultural convergence. Nevertheless, a study that analyzed Puerto Rico retail sales of women's apparel found that seasonality in purchasing patterns is more related to special occasions (e.g. Mother's Day, Father's Day and Christmas) than to seasons, suggesting that Puerto Rico is a gifting culture (Nieves *et al*., 2015). Puerto Ricans are very festive and passionate people (Christoforo, 1991), and for that reason, besides subsuming traditional American holidays, Puerto Ricans observe 18 public holidays (Caribbean Business, 2015), whereas, on average, the United States observes 10 federal public holidays (The U.S. National Archives and Records Administration, 2015).

Expectedly, another Puerto Rico study found shopping differences by gender, considering that men and women behave in accordance with their own gender perceptions (Nisbett as cited in Kongsompong, 2006) and roles (Kongsompong, 2006). Although Puerto Rican men are more involved in shopping than traditionally observed, their habits and perceptions are still quite different from women's (Fajardo, 2014). Similarly, a United States study found that retail-shopping experience between men and women differs (Wharton, 2007). For instance, women are more likely to purchase clothing and apparel than men (Rajput *et al*., 2012), which may be explained by other studies showing that men are more likely than women to withdraw when encountering an obstacle in the shopping experience (Wharton, 2007).

So strong are culture and gender's influences, that we must consider their interaction separately. A unique study that analyzed consumer behavior within and between Singapore and Australia found that consumer behavior differs across these two markets, also highlighting gender-related differences within the countries (Kongsompong, 2006). Considering these factors, we wonder whether these findings are consistent with consumer behavior in Puerto Rico and the United States.

This study's purpose is to analyze culture and gender's influence, and their interaction on Puerto Rico and United States apparel purchase patterns. In absence of validated Hofstede national cultural dimensions for Puerto Rico, the study considers seasonality as an apparel purchase pattern factor to develop a consumer behavior model for the Puerto Rico and United States apparel industries. Besides making theoretical contributions to research of Convergence in the western world, the study also contributes to the literature, introducing a novel methodology to compare and contrast consumption patterns between countries.

The following section reviews extant consumer behavior literature related to culture and gender's influence, and their interaction on consumer behavior. Section Two establishes our theoretical framework, based on Samli's (2013) international consumer behavior model. Section Three describes our data, variable operationalization and modeling equations. Section Four presents our results, whereas Section Five concludes. Section Six provides our study's contributions, Section Seven states our study's managerial implications for apparel retailers' forecasting and strategic planning, and Section Eight states our study's limitations and future research areas.

1. LITERATURE REVIEW

International market effectiveness requires adapting to cultural values (De Mooij, 2003; Kongsompong, 2006; Luna and Gupta, 2001; Nicholls *et al*., 2003; Samli, 2013) as well as gender differences (Rajput *et al*., 2012). Researchers have used behavioral intention models to analyze consumption patterns in different countries; however, some scholars now acknowledge these models' limitations, seeking to isolate and understand culture's effect on consumption (Malhotra and McCort, 2001). We now turn to a discussion of existing literature on culture's effect on consumer behavior.

Culture as a Predictor of Consumer Behavior

De Mooij's (2000) study suggests that cultural values are constant, and as incomes converge, cultures' influence on consumer behavior becomes apparent. This study uses national

wealth from different European countries and Hofstede's five cultural dimensions[3] as independent variables, and product consumption and ownership of mineral water, cars and internet as dependent variables in a correlation and regression analysis. Results showed that when countries converge with respect to national wealth, cultural variables become better predictors of country-level consumer behavior.

Comparing Latin and North America, Nicholls *et al*. (2003) conducted a comparative study addressing Chile and the United States consumer behavior at large-scale regional shopping centers. Their results indicated that, although some behaviors may be universal among all shoppers regardless of culture, other behaviors, such as need-driven purchases, might be highly culture-specific. This finding supports the notion that certain behaviors are vulnerable to cultural influences.

De Mooij and Hofstede (2002) expanded De Mooij (2000) by including more product categories. The authors used the coefficient of variation as an indicator of consumption convergence or divergence, ownership and usage of different goods and services across European countries at certain occasions. Their results showed convergence on five of the eighteen product categories. The authors also conducted an analysis using national wealth and the coefficient of variation, demonstrating that, although initial differences in product usage and ownership may be attributed to differences in national wealth, as national wealth converges its explanatory power declines. The correlation and regression analysis used national wealth and Hofstede's cultural dimensions as independent variables and consumption and purchase behaviors as dependent variables across thirteen European countries. Results illustrated that

[3] In the 2010 edition of Cultures and Organizations, a sixth dimension has been added, based on Michael Minkov's analysis of the World Values Survey data for 93 countries. This new dimension is called Indulgence versus Restraint (IND) (The Hofstede Centre: http://geert-hofstede.com/national-culture.html).

when countries' national wealth converges, cultural factors better predict consumer behavior at the country-level.

Impact for Retailers

Apparel firms are oft-focused on adjusting to ever-changing trends, being challenged to comprehend cultural values' pervasiveness (De Mooij, 2000). Nevertheless, to avoid significant financial losses, international retailers expanding operations to foreign countries should aim to predict and explain cultural differences (Murphy, 1999).

An example of a clothing retailer that failed to consider these differences in consumer behavior is international Dutch chain C&A. The company standardized its buying in Europe, and three years later closed down all 199 stores established in the United Kingdom and Ireland due to substantial losses (De Mooij and Hofstede, 2002). After experiencing profit declines due to centralized operations and standardized advertising campaigns, some multinational firms are gravitating towards strategies that include local sensitivities (De Mooij, 2003).

Despite awareness that culture influences consumer purchase, including apparel (Rajagopal, 2011), we found no research about Puerto Rico and United States apparel shopping behavior, nor any that compared consumption patterns in these two countries.

We now turn to a discussion of gender as a moderator of culture's effect on consumer behavior. As will be discussed, the literature has acknowledged gender's effect on consumption, but has not extensively studied its interaction with culture. This gap motivates our analysis in Section Three, which will demonstrate how gender's impact on international marketing strategies depends on diverse cultural contexts.

Gender as Moderator

Some scholars argue that, to develop successful marketing strategies, managers must understand men and women's behavioral patterns (Rajput *et al*., 2012), primarily because women's purchase behavior vastly differs from men's (Rajagopal, 2011). However, recent changes in men's purchase behavior and gender expectations (Kongsompong, 2006) indicate that men may tend to behave more like women (Teather as cited in Kongsompong, 2006). Still, some authors argue that men and women respond to market products in different ways because of differing gender roles (Fischer and Arnold, 1994).

For instance, men are more attracted to luxury and leisure items such as music systems and videos games, whereas women prefer products that create an impression and manifest their personality, such as apparel and accessories (Rajput *et al*., 2012). Women enjoy apparel shopping as it helps build their identity and improve their own self-esteem (*ibid*).

The literature suggests that, besides culture, gender influences consumption. A study that compares purchasing behavior within and between men and women in Singapore and Australia demonstrated that consumer behavior differs across the two markets, highlighting gender-related differences within countries (Kongsompong, 2006). These results suggest that gender may moderate culture's influence on consumer behavior.

To isolate culture and gender's effect on consumer behavior, we must control for seasonality, which highlights certain consumption patterns from year to year. We now turn to a discussion of and approaches to model seasonality.

Modeling Seasonality

The literature suggests that culture influences purchase behavior, and gender may moderate this relationship. For this reason, modeling seasonality is crucial to analyzing purchase patterns as seasonality greatly affects expenditure decisions. Moreover, modeling seasonality may be instrumental to developing tailored marketing strategies (Radas and Shugan, 1998).

Seasonality Defined

The term "seasonality" refers to yearly patterns in consumption of goods and services (Wagner and Mokhtari, 2000). Certain exogenous factors, such as the holidays, government actions, industry traditions, climate, social phenomena, summer and school years, cause seasonal patterns (Radas and Shugan, 1998).

Retailers and applied economists consider apparel a textbook example of a seasonal good (Soysal and Krishnamurthi, 2012; Winakor, 1969). Clothing offers weather-protection throughout the annual seasons, and caters to social needs during holidays and festivities (Horn and Gurel, 1981). Therefore, modeling seasonality is instrumental in analyzing consumption patterns (Osborn, 1988), helping dictate marketing strategies (Radas and Shugan, 1998).

Research on Seasonality and Consumption

Research on seasonality suggests that, although geographical and climatic factors define seasons, patterns that do not necessarily correspond to seasons define consumers' psychological perception and behavior (Vicary, 1955). Kirk (2005) found that certain items are seasonal because they are climate-influenced. However, climate does not solely determine seasonality. For instance, Scott (1995) found that, in addition to climate variations, factors such as income

and interest rates affect seasonal consumption, but do not capture seasonality's effect on consumption. Instead, sociocultural special occasions, such as Mother's Day and the Winter Holidays better explain this effect (Swilley and Goldsmith, 2013).

Seasonality Analysis' Managerial Applications

Seasonality analysis is useful when sales forecasting (Steele, 1951). A crucial aspect of demand planning, seasonality allows firm managers to generate reasonable sales projections (Jain and Covas, 2010), and effectively manage the supply chain (Das, 2007).

Seasonality analysis also serves to determine the optimal timing for product introductions. Seasonality gives rise to temporary demand peaks (Cartier and Liarte, 2010), representing opportunities for product introduction (Radas and Shugan, 1998; Rajagopal, 2008).

Despite seasonality's relevance, researchers have not studied its impact on marketing strategy (Radas and Shugan, 1998). Instead, research on seasonality centers on statisticians and econometricians' objective to remove its effect, instead of analyzing the phenomenon, *per se*.

As aforementioned, researchers are trying to comprehend culture's effect on consumer behavior. However, most existing models are too abstract and complicated for managers to understand and apply, especially in the international (Manrai and Manrai, 1996) context. According to Luna and Gupta (2001), a model that successfully addresses consumption across cultures from a managerial standpoint is Samli's (2013) international consumer behavior model. In Samli's model, the endpoint is purchase, which is tractable.

In light of the above, we now describe our theoretical framework, grounded on Samli's (2013) model (see Figure 1). As will be discussed, we expanded this model to measure culture's effect on consumption, as modified by gender.

2. THEORETICAL FRAMEWORK

Under Samli's model, culture is the main consumer behavior modifier, communicating with individuals and creating a sense of product value. This perceived product value regarding design, workmanship and quality arises from the country-of-origin effect (the "COO Effect" or "COO"). The COO Effect links the reputation of the production country or company with consumer's perceived product attributes. In more detail, consumers use COO to reinforce, create and bias initial perceptions of products, compelling them to pay a premium for products from certain countries. Consumers then modify these perceptions in accordance with their personal experience with the product. All these elements form a consumer attitude that translates into purchase. These psychological elements are inside what we call the "black box" (see Figure 1) and fall beyond the purview of this study.

We instead focus on culture's effect, as moderated by gender, on purchase behavior (Figure 1). We operationalize culture via a dummy variable for country, and discuss the operationalization of this variable, as well as that of the other variables of interest in the Analysis section below. Contributing to Samli's model, we include both gender and seasonality's potential moderating role as purchase pattern factors.

As above discussed, the literature suggests that culture influences purchase, and that gender may moderate this influence. In this respect, modeling seasonality may aid the analysis of purchase patterns as seasonality plays a significant role in expenditure decisions. Seasonality in the apparel industry mostly relates to annual seasons and special occasions. Based on these suggestions, the hypotheses are:

--Insert Figure 1 about here--

H1: Culture influences apparel purchase;

H2: Gender moderates culture's influence on apparel purchase; and

H3: The annual seasons and special occasions predict apparel purchase (together referred to as the "Hypotheses").

To test these Hypotheses, we developed the following analysis.

3. ANALYSIS

Data

This study considers national retail sales of men and women's apparel in Puerto Rico and the United States. We compiled data, making no distinction among apparel categories. We extracted Puerto Rico retail sales data from the Puerto Rico Export and Trade Company and the United States' from the United States Census Bureau[4]. Available apparel data was of a monthly frequency and spanned from January 2006 to December 2010 (the "Study Period"). Since we deem monthly data sufficient to identify patterns of interest, we standardized all data into monthly frequency as described below.

To juxtapose consumer behavior across countries, we must isolate the effect of significant socioeconomic factors, including controlling for the impact of the recent global recession. For that reason, to control for wealth and inflation this study adjusts for the gross domestic product

[4] Both retail sales data for the United States and Puerto Rico include apparel internet sales. Please see http://www.census.gov/retail/forms_and_letters/marts/sm4406a.pdf and http://www.comercioyexportacion.com/images/Cuestionario_EVD_-_Espanol_Enabled.pdf.

("GDP") and the consumer price index ("CPI"), adopting a per capita measure to control for population size.

We gathered Puerto Rico and the United States' GDP data from the World Bank. The data are of annual frequency during the Study Period. To standardize with the rest of the data, we converted GDP data to monthly frequency. We gathered Puerto Rico and United States' CPI data from the Puerto Rico Statistics Institute and the United States Bureau of Labor Statistics, respectively. Controlling for inflation in retail sales, we used CPI monthly frequency for men and women's apparel during the Study Period. Controlling for inflation in GDP, we used CPI annual frequency for all items during the Study Period. We extracted both Puerto Rico and United States population data from the United States Census Bureau. This data was of annual frequency, and we standardized it into monthly frequency. After controlling for these socioeconomic variables, we obtained a readily comparable dataset, illustrating Puerto Rico and United States real sales per capita of men and women's apparel (see Figure 2).

Operationalization of Variables

Using Matlab R2010a, we conducted an OLS regression analysis to determine the interaction among culture, gender and purchase patterns of men and women's apparel in Puerto Rico and the United States. We considered seasonality as a factor of purchase patterns, incorporating annual seasons and special occasions into the analysis to represent seasonality in the data. Focusing on Puerto Rico and the United States, Figure 2 reveals retail sales peaks around May, June and December for which Mother's Day, Father's Day and Christmas were the special occasions considered, respectively.

We introduced the following dummy variables in our model equations: 1) annual seasons $\{D_{Spring}, D_{Summer}, D_{Winter}\}$, 2) the special occasions of Mother's Day, Father's Day and

Christmas $\{D_{Mday}, D_{Fday}, D_{Xmas}\}$, 3) country as a proxy for culture $\{D_{United\ States}\}$, and 4) gender $\{D_{Women}\}$ (together referred to as the "Dummy Variables"). Although we based our model on others that incorporate regressors for Hosftede´s national culture dimensions to characterize culture, as no validated Hofstede measures have been developed for Puerto Rico, we did not include any Hofstede measures in our analysis, as will be further discussed.

--Insert Figure 2 about here--

Modeling Equations

We considered two main modeling environments: 1) Model A where we used annual seasons to control for seasonality in the retail sales data, and 2) Model B where the special occasions corresponding to Mother's Day, Father's Day and Christmas are regressors representing seasonality.

Our analysis first determines culture and gender's effect on purchase behavior, and their interaction. To this end, we summed retail sales data of both countries and considered it as the dependent variable in the modeling equations. Then, we introduced the Dummy Variables in Model A and Model B. As Figure 2 shows that apparel retail sales peaks around May, June and December, the benchmark scenario for Model A consists of the fall season and for Model B of all calendar months save for May, June and December. The benchmark scenarios also include Puerto Rico and men. We included the estimation attribute of the benchmark scenario in the constant regressor of the model equation. Equations (A) and (B) represent the two modeling environments, henceforth denominated as Model A1 (the "Annual Seasons Model") and Model B1 (the "Special Occasions Model"), respectively.

$$Y_t = \beta_1^{A1} + \beta_2^{A1} D_{Spring,t} + \beta_3^{A1} D_{Summer,t} + \beta_4^{A1} D_{Winter,t} + \beta_5^{A1} D_{United\ States,t} + \beta_6^{A1} D_{Women,t} + \beta_7^{A1} D_{United\ States} D_{Women,t} + \varepsilon_t^{A1} \quad \text{(A)}$$

$$Y_t = \beta_1^{B1} + \beta_2^{B1} D_{Mday,t} + \beta_3^{B1} D_{Fday,t} + \beta_4^{B1} D_{Xmas,t} + \beta_5^{B1} D_{United\ States,t} + \beta_6^{B1} D_{Women,t} + \beta_7^{B1} D_{United\ States} D_{Women,t} + \varepsilon_t^{B1} \quad \text{(B)}$$

As stated, the Annual Seasons Model (Model A1) considers retail sales data of the months representing the occasions included as regressors in the Special Occasions Model (Model B1). A better formulation of the Annual Seasons Model carves out the months representing these occasions, as they may be outliers. Therefore, we proffer an alternate model for Model A1, wherein we removed the months representing the occasions of Mother's Day, Father's Day and Christmas from the retail sales data in the same modeling equation. This alternate model is henceforth denominated as Model A1[1] (the "Modified Annual Seasons Model").

Both Model A1 and Model A1[1] capture significant variation in sales (see Table 1). Nevertheless, these two models differ when considering the coefficient estimate of the winter dummy variable. In Model A1, the coefficient shows a monthly increase in real sales per capita ("Sales") during the winter season, whereas in Model A1[1] the coefficient shows a monthly decrease in Sales during the winter season. This difference indicates a significant increase in sales during Christmas that counters the sales drop that seems to occur during the remaining two winter months. Therefore, Model A1[1] isolates the annual seasons' effect on purchase patterns without confounding any sales effect caused by special occasions.

Our analysis then determined which model better captures men and women's apparel purchase patterns in each culture, parsing retail sales data by culture and facilitating a

comparison between Puerto Rico and United States purchase patterns. As a result, we further adjusted the Modified Annual Seasons Model (Model A1[1]) and the Special Occasions Model (Model B1) by removing the country dummy variables, as they were no longer pertinent. Moreover, since Figure 2 suggested interactions among the Dummy Variables, we included these interactions, resulting in two new modeling equations to analyze retail sales data by culture. Equations (A2) and (B2) represent the new modeling environments, hereinafter denominated as Model A2 and Model B2, respectively.

$$Y_t = \beta_1^{A2} + \beta_2^{A2} D_{Spring,t} + \beta_3^{A2} D_{Summer,t} + \beta_4^{A2} D_{Winter,t} + \beta_5^{A2} D_{Women,t} + \beta_6^{A2} D_{Spring}\, D_{Women,t} + \beta_7^{A2} D_{Summer}\, D_{Women,t} + \beta_8^{A2} D_{Winter}\, D_{Women,t} + \varepsilon_t^{A2} \quad \text{(A2)}$$

$$Y_t = \beta_1^{B2} + \beta_2^{B2} D_{Mday,t} + \beta_3^{B2} D_{Fday,t} + \beta_4^{B2} D_{Xmas,t} + \beta_5^{B2} D_{Women,t} + \beta_6^{B2} D_{Mday}\, D_{Women,t} + \beta_7^{B2} D_{Fday}\, D_{Women,t} + \beta_8^{B2} D_{Xmas}\, D_{Women,t} + \varepsilon_t^{B2} \quad \text{(B2)}$$

Models A2 and B2 are the same for both cultures. To distinguish the models as applied to each culture, we used the following nomenclature: Model A2-PR, Model A2-USA, Model B2-PR and Model B2-USA.

4. MODELING ANALYSIS RESULTS

Figure 2 suggests that women's Sales are higher than men's Sales, but this gap is shorter between Puerto Rican men and women and longer between American men and women. Table 1 summarizes the least squares coefficient estimates of Equations (A) and (B), and reporting, in parentheses, the absolute value of the t-statistics of the coefficient estimates, and the R^2, the

adjusted R^2 and the degrees of freedom of each model. As abovementioned, Model A1[1] better captures seasons-related purchase patterns than to Model A1.

--Insert Table 1 about here--

When estimating Model A1[1], the results show an R^2 of 97 percent and all coefficient estimates, save for the spring dummy variable, have at least a 5 percent significance. When estimating Model B1, the results reveal an R^2 of 93 percent and all coefficient estimates have 1 percent significance. These results suggest that the Modified Annual Seasons Model (Model A1[1]) and the Special Occasions Model (Model B1) may be complementarily used to estimate men and women's apparel retail sales in Puerto Rico and the United States. Furthermore, the country (culture) and gender dummy variables, and their interaction are statistically significant ($p<0.01$) in both models. These results indicate that, when controlling for annual seasons and special occasion's effect, culture is a good predictor of apparel retail sales, and gender moderates this relationship.

Table 2 presents the least squares coefficient estimates of Equations (A2) and (B2), providing, in parentheses, the absolute value of the t-statistics of the coefficient estimates, and the R^2, the adjusted R^2 and the degrees of freedom of each model. The R^2 of Model A2 is 86 percent for Puerto Rico and 99 percent for United States. Similarly, the R^2 of Model B2 is 86 percent for Puerto Rico and 98 percent for United States.

These results suggest that Models A2 and B2 can be complementarily used to estimate men and women's apparel retail sales in each culture as the R^2's indicate a substantially good fit. Via an F-test to measure the marginal contribution of interactions between the Dummy

Variables, we infer that the marginal contribution of these interactions is statistically significant ($p<0.05$), and therefore belong in Model A2 and Model B2.

Based on the Table 2 results, we formulated the implied regression equation in Models A2 and B2 for each group (PR-Men; PR-Women; USA-Men; USA-Women).

--Insert Table 2 about here--

Model A2:

PR-Men: $$\widehat{R.Sales\ per\ Capita} = 2.3 - 0.29\ x\ Spring + 1.22\ x\ Summer - 0.2\ x\ Winter \quad (5)$$

PR-Women: $$\widehat{R.Sales\ per\ Capita} = 4.9 - 0.07\ x\ Spring + 0.12\ x\ Summer - 0.34\ x\ Winter \quad (6)$$

USA-Men: $$\widehat{R.Sales\ per\ Capita} = 2.21 - 0.11\ x\ Spring - 0.16\ x\ Summer - 0.39\ x\ Winter \quad (7)$$

USA-Women: $$\widehat{R.Sales\ per\ Capita} = 9.92 + 0.29\ x\ Spring + 0.04\ x\ Summer - 1.63\ x\ Winter \quad (8)$$

Model B2:

PR-Men: $$\widehat{R.Sales\ per\ Capita} = 2.46 + 0.52\ x\ Mday + 2.57\ x\ Fday + 4.27\ x\ Xmas \quad (9)$$

PR-Women: $$\widehat{R.Sales\ per\ Capita} = 4.84 + 1.86\ x\ Mday - 0.09\ x\ Fday + 6.26\ x\ Xmas \quad (10)$$

USA-Men: $$\widehat{R.Sales\ per\ Capita} = 2.06 + 0.16\ x\ Mday + 0.14\ x\ Fday + 1.59\ x\ Xmas \quad (11)$$

USA-Women: $$\widehat{R.Sales\ per\ Capita} = 9.63 + 1.18\ x\ Mday + 0.54\ x\ Fday + 4.68\ x\ Xmas \quad (12)$$

When estimating Model A2-PR and Model A2-USA, the results show that monthly men's Sales are, on average, \$2.30 and \$2.21 for Puerto and the United States, respectively, and monthly women's Sales are, on average, \$4.90 and \$9.92 for Puerto Rico and the United States, respectively. Therefore, the differential effect between women is higher in the United States.

The dummy variable representing the summer season and the interaction between this variable and that representing women was statistically significant ($p<0.01$) for Puerto Rico. The

results show that, on average, monthly men's Sales increase by $1.22 during the summer season, whereas monthly women's Sales approximately remains at the benchmark. This result represents an average increase of 53 percent in monthly men's Sales.

Meanwhile, the dummy variable representing the winter season, the interaction between the dummy variables representing the spring season and women, and the interaction between the dummy variables representing the winter season and women are statistically significant ($p<0.05$, $p<0.1$ and $p<0.01$, respectively) for the United States. The results show that monthly women's Sales increased, on average, by $0.29 during the spring season, representing an increase of 3 percent. During the winter season, monthly men's Sales decreased, on average, by $0.39, whereas monthly women's Sales decreased, on average, by $1.63. These results represent an average decrease of 18 percent and 16 percent in monthly Sales of men and women's apparel, respectively.

When estimating Model B2-PR and Model B2-USA, the results indicate that monthly men's Sales are, on average, $2.46 and $2.06 for Puerto and the United States, respectively, and monthly women's Sales are, on average, $4.84 and $9.63 in Puerto Rico and the United States, respectively. Therefore, the differential effect for women is higher in the United States.

The dummy variables representing Father's Day and Christmas, and those representing the interaction between Mother's Day and women, the interaction between Father's Day and women and the interaction between Christmas and women are statistically significant ($p<0.01$, $p<0.01$, $p<0.05$, $p<0.01$ and $p<0.01$, respectively) for Puerto Rico. These results indicate that, on average, women's Sales increased by $1.86 during Mother's Day, representing a 38 percent average increase. During Father's Day, men's Sales increased, on average, by $2.57, representing a 104 percent average increase, whereas women's Sales stayed on average. During

Christmas, men's Sales increased, on average, by $4.27, whereas women's Sales increased, on average, by $6.26. These results represent a 174 percent and a 129 percent average increases, respectively.

The dummy variable representing Christmas, and those representing the interaction between Mother's Day and women, and the interaction between Christmas and women were statistically significant ($p<0.01$, $p<0.05$ and $p<0.01$, respectively) for the United States. These results show that, on average, women's Sales increased by $1.18 during Mother's Day, amounting to 12 percent average increase. During Christmas, men's Sales increased, on average, by $1.59, whereas women's Sales increased, on average, by $4.68, amounting to 77 percent and 49 percent average increases, respectively. Figure 3 summarizes the most significant results.

--Insert Figure 3 about here--

5. CONCLUSIONS

This study analyzed culture and gender's influence, and their interaction, on Puerto Rico and United States consumer behavior. It used seasonality as a factor of apparel purchase patterns to develop a consumer behavior model for the Puerto Rico and United States apparel industries. Besides contributing to the consumer behavior literature, the study fills a gap by introducing a novel methodology to juxtapose consumption patterns between countries. Due to the particular relationship between Puerto Rico and the United States, this study has managerial and strategic implications, demonstrating how a country's political and economic influence over another for a century results in unpredictable effects on consumer behavior, challenging Convergence.

Results suggest that, on average, Puerto Rican consumers spend more in apparel than American consumers do. However, when analyzed by gender, monthly women's Sales are above men's in both countries, and monthly women's Sales in the United States are almost double of its Puerto Rico counterpart.

Considering annual seasons, monthly men's Sales in Puerto Rico increase during summer, which may be attributed to the fact that men replenish their closets during their summer break. Meanwhile, the increase in monthly women's Sales during the spring in the United States may indicate that women want to wear new weather-appropriate outfits. Additionally, we identified a drop in monthly men and women's Sales in the United States during the winter that we did not perceive in Puerto Rico. An explanation could be that American consumers acquire most of their winter apparel during the Christmas holidays and then reduce spending, as they do not want to purchase clothes that may not be appropriate for the upcoming seasons. Whereas, with a year-round tropical climate, Puerto Rican consumers continue to purchase apparel.

Considering special occasions, Mother's Day seems to be an occasion where women's Sales increases in both countries, although the increase is higher in Puerto Rico than in the United States. Meanwhile, men's Sales only increased in Puerto Rico during Father's Day. This finding may imply that Puerto Rican men may be more fashion-conscious and therefore more interested in apparel, while American men may be more attracted to other product categories. Nevertheless, we bear in mind that data used in our analysis does not necessarily reflect purchasers' gender, and that perhaps an increase in menswear purchases during the month of Father's Day could be explained by Puerto Rico's gifting culture (Nieves *et al*., 2015), whereby both women or men are buying and gifting menswear.

During the Christmas holidays, the increase in men and women's Sales is greater in Puerto Rico than in the United States, suggesting that special occasions' influence may be stronger in Puerto Rico than in the United States due to Puerto Rico's gifting culture.

The economic recession faced by Puerto Rico may not be a deterrent to manifest its gifting culture, as having scarce disposable income has not stopped Puerto Ricans from shopping. Shopping on credit is quite popular on this island, where the 3.65 million population holds more than $22 billion in consumer debt (Coto, 2015). Laura Ortiz, a sociology professor from the University of Puerto Rico, stated that consumers she interviewed for her book "Shopping in Puerto Rico" asserted they did not worry about debt, as they would "handle it" (*ibid*). This highly consumerist mindset is showcased at Plaza Las Americas, the largest shopping center in the Caribbean, which generates roughly twice the sales-per-square-foot of the average United States mall and draws up to 70,000 visitors daily (Coto, 2015).

Our findings indicate that the Modified Annual Seasons Model (Model A1[1]) and the Special Occasion Model (Model B1) must be complementarily used to understand Puerto Rico and United States men and women's apparel purchase patterns and estimate sales. Therefore, the annual seasons and the occasions of Mother's Day, Father's Day and Christmas are good apparel purchase predictors. This result is consistent with findings of other researchers (Kirk, 2005; Radas and Shugan, 1998; Scott, 1995). Moreover, results confirm that culture influences apparel purchase, as moderated by gender. This finding concurs with results from previous cross-cultural research (De Mooij, 2000; De Mooij and Hofstede, 2002; Nicholls *et al*., 2003) and from Kongsompong's (2006) study, further supporting our Hypotheses.

Alison Kenney Paul, former vice-chairman and leader of Deloitte, LLP's United States retail practice, stated that, although many of the same laws apply, retailers do not know whether

to treat Puerto Rico as a domestic or international market (Gustafson, 2015). As our study shows, Puerto Rico and the United States are a singular example of two countries that converge in many social, political and economic aspects, but still show divergence in consumer behavior due to cultural factors, disproving Convergence Theory. Therefore, Puerto Rico should be treated as an international market. Our findings concur with results of two studies (De Mooij, 2000; De Mooij and Hofstede, 2002) that analyzed culture's effect on consumer behavior across politically and economically bound countries from the European Union.

6. CONTRIBUTIONS AND EXTENDED INTERNATIONAL CONSUMER BEHAVIOR MODEL

This study contributes to consumer behavior literature by empirically validating certain elements of Samli's international consumer behavior model. Our analysis confirmed that culture influences purchase, and adds that gender moderates this influence. Additionally, it intertwines consumer behavior and seasonality literature, introducing a model for the apparel industry wherein annual seasons and special occasions predict purchase, and culture and gender serve as moderators (see Figure 4). Furthermore, this study contributes to seasonality literature by developing an econometric model tailored for Puerto Rico and the United States.

The above findings demonstrate that cross-cultural studies may be robust in absence of available Hofstede´s dimensions for a country. We encourage pursuing similar cross-cultural studies for countries where values for Hofstede's dimensions are not available.[5]

--Insert Figure 4 about here--

7. MANAGERIAL IMPLICATIONS

[5] As of November, 2015, Hofstede's webpage (http://geert-hofstede.com/countries.html) has available the national culture dimensions for 102 out of 193 countries (about half of the countries).

Our analysis offers information regarding similarities and differences in Puerto Rico and United States consumer purchase patterns, providing retailers operating in both markets an effective forecasting and strategic planning tool. Complying with Porter's competitive advantage, in which international marketers must first gain knowledge about international consumers (Samli, 2013), our analysis debunks the notion that consumer behavior is universal (Samli, 1995).

This study is relevant for marketing strategy, especially as it pertains to seasonality. With a seasonal strategy, products vary throughout the year and consumers do not get tired of the same offerings (Pitta and Scherr, 2009). The high sales periods identified in this study provide firms an opportunity to introduce, retire and reintroduce products.

Our findings can aid managers in estimating sales, anticipating sales peaks and lows by adjusting the number of salespeople and inventory, and developing promotional plans that take avail of high sales periods. Moreover, based on this analysis managers may develop an index for benchmarking when assessing performance on selected economic, financial and marketing measures.

8. LIMITATIONS AND FUTURE RESEARCH

This study is limited to men and women's apparel retail and excludes apparel department store sales (as they were not segmented from total department store sales) and exclusively online store sales. This exclusion may have caused gaps in apparel sales data. However, since data was lacking in both countries, no systematic bias may be present.

Furthermore, we did not distinguish between product categories and brands. Further research should identify which product categories or brands sell the most and least as it could

serve retailers to identify appropriate target markets for these items. Moreover, the analysis could include other marketing variables to demographically describe buyers and determine an optimal price range to maximize sales. Our analysis could also be applied to other product or service categories.

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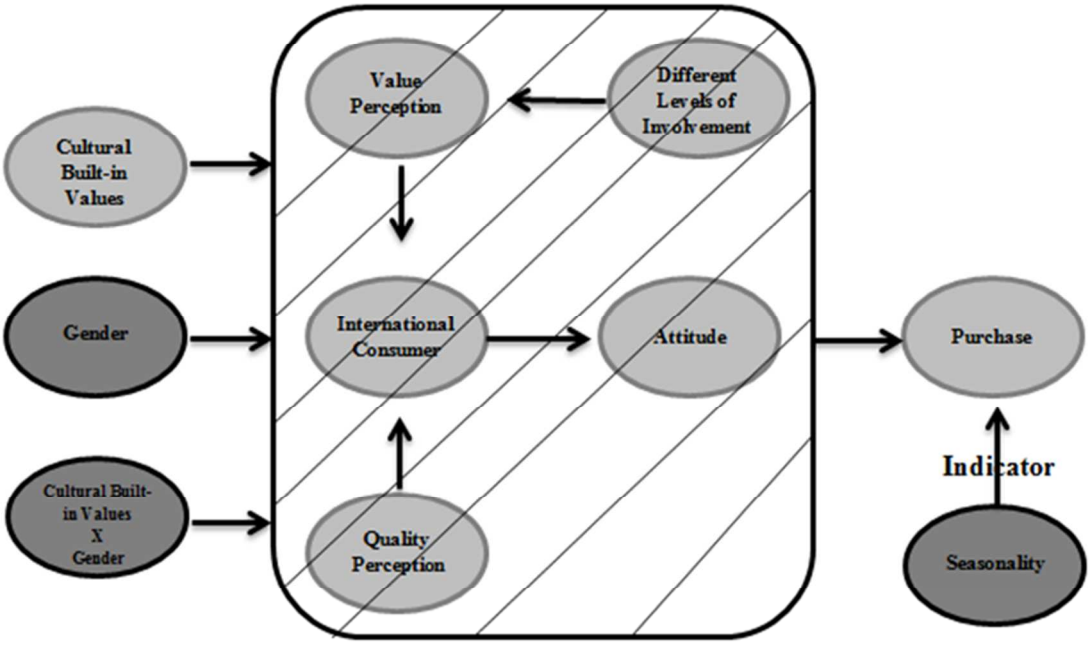

Figure 1. International consumer behavior model (adapted from Samli 2013)

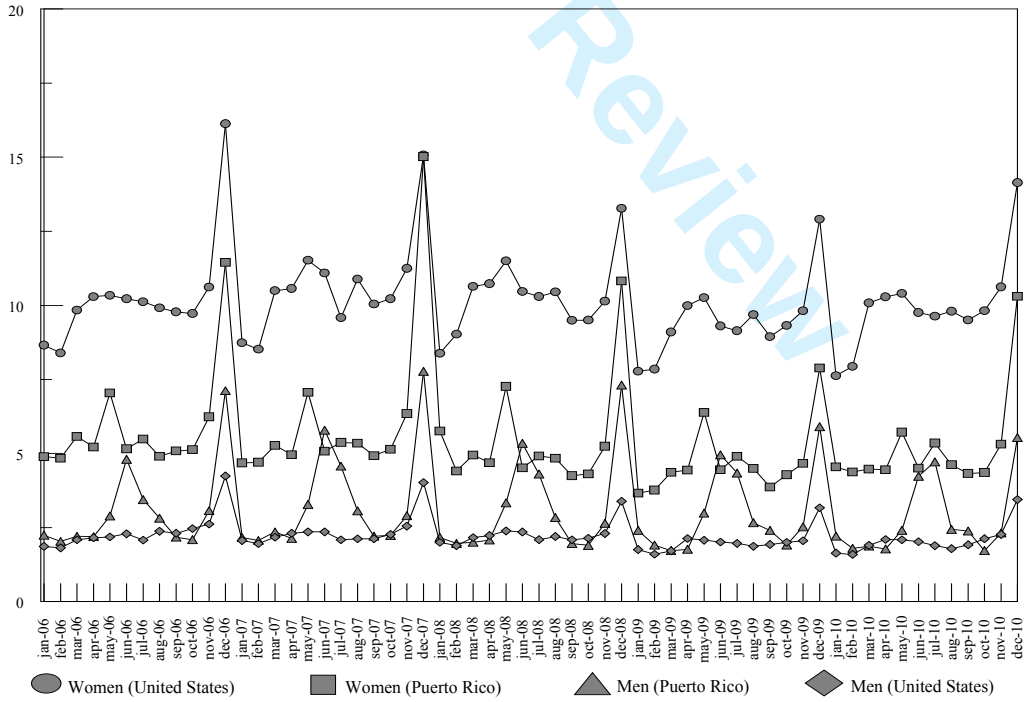

Figure 2. Real apparel sales per capita (USD)

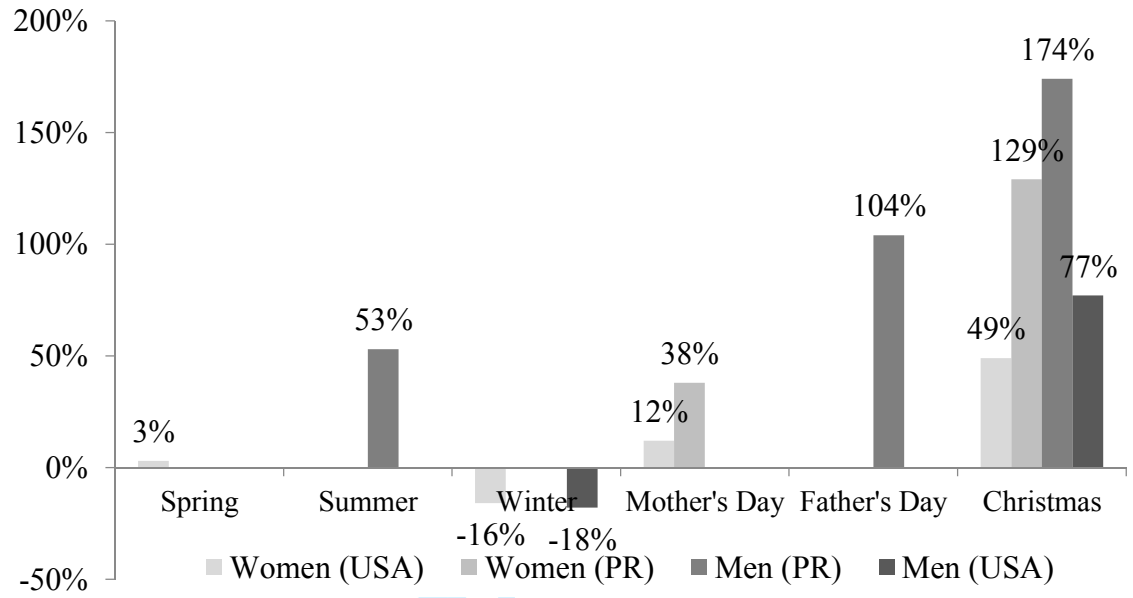

Figure 3. Percent change in real apparel sales per capita

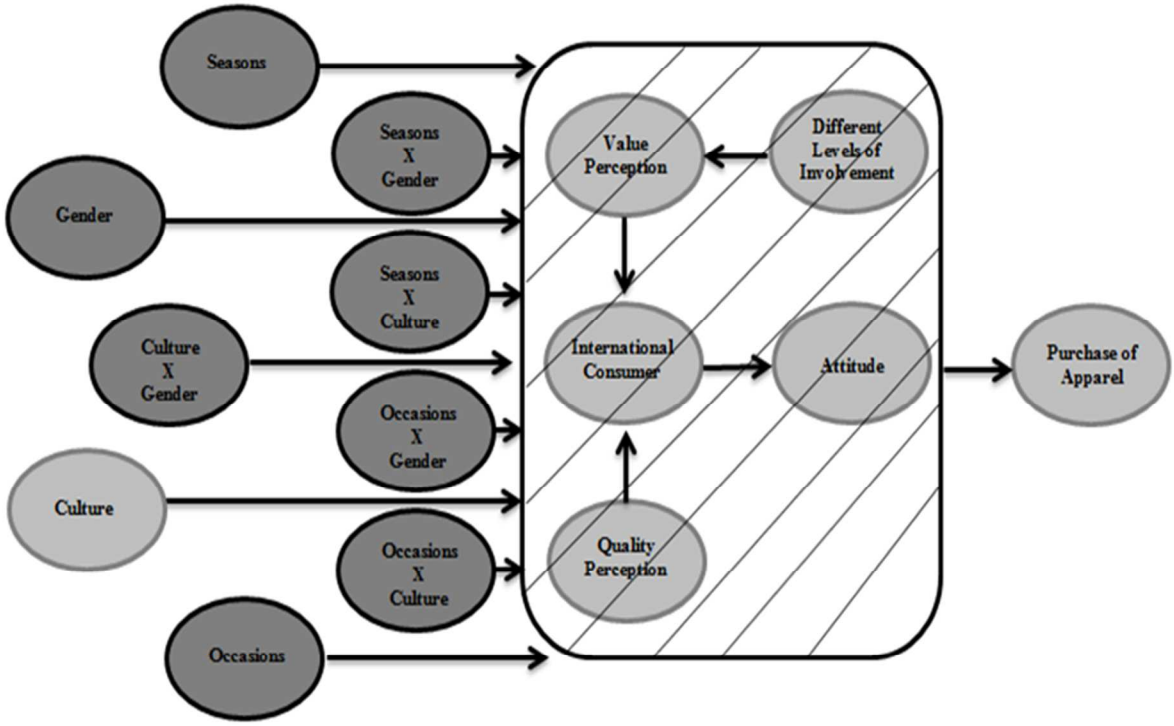

Figure 4. Apparel purchase model constructs
(adapted from Samli 2013)

Table 1. Estimation results for equations A and B

	Model A1	Model A1[1]	Model B1
Intercept	**2.67** (10.72)***	**2.55** (24.32)***	**2.58** (20.79)***
D_{Spring}	**0.25** (0.94)	**-0.04** (0.38)	
D_{Summer}	**0.44** (1.65)*	**0.30** (2.60)**	
D_{Winter}	**0.95** (3.56)***	**-0.64** (5.47)***	
D_{Mday}			**0.93** (4.26)***
D_{Fday}			**0.79** (3.62)***
D_{Xmas}			**4.20** (19.29)***
$D_{United\ States}$	**-0.85** (3.21)***	**-0.40** (3.30)***	**-0.85** (5.07)***
D_{Women}	**2.43** (9.15)***	**2.38** (19.68)***	**2.43** (14.43)***
$D_{United\ States}D_{Women}$	**5.51** (14.65)***	**5.19** (30.35)***	**5.51** (23.09)***
R^2	**0.82**	**0.97**	**0.93**
Adj-R^2	**0.82**	**0.97**	**0.93**
df	**233**	**173**	**233**

***: 1% significance ; **: 5% significance; *: 10% significance

Table 2. Estimation results for equations A2 and B2

	Model A2-PR	Model A2-USA	Model B2-PR	Model B2-USA
Intercept	**2.30** (16.95)***	**2.21** (21.88)***	**2.46** (20.46)***	**2.06** (21.00)***
D_{Spring}	**-0.29** (1.33)	**-0.11** (0.71)		
D_{Summer}	**1.22** (5.71)***	**-0.16** (1.03)		
D_{Winter}	**-0.20** (0.93)	**-0.39** (2.45)**		
D_{Mday}			**0.52** (1.37)	**0.16** (0.50)
D_{Fday}			**2.57** (6.74)***	**0.14** (0.46)
D_{Xmas}			**4.27** (11.22)***	**1.59** (5.12)***
D_{Women}	**2.60** (13.58)***	**7.71** (53.97)***	**2.38** (13.98)***	**7.57** (54.50)***
$D_{Spring} D_{Women}$	**0.22** (0.74)	**0.40** (1.76)*		
$D_{Summer} D_{Women}$	**-1.10** (3.63)***	**0.20** (0.87)		
$D_{Winter} D_{Women}$	**-0.14** (0.45)	**-1.24** (5.49)***		
$D_{Mday} D_{Women}$			**1.34** (2.48)**	**1.02** (2.32)**
$D_{Fday} D_{Women}$			**-2.66** (4.95)***	**0.40** (0.91)
$D_{Xmas} D_{Women}$			**1.99** (3.70)***	**3.09** (7.03)***
R^2	**0.86**	**0.99**	**0.86**	**0.98**
Adj-R^2	**0.85**	**0.99**	**0.86**	**0.97**
df	**82**	**82**	**112**	**112**

***: 1% significance; **: 5% significance; *: 10% significance