Partitioned country of origin effect on consumer behavior: a meta-analytic review of empirical evidence

Alessandro De Nisco
University of International Studies of Rome - UNINT
Stephen Oduro
University of International Studies of Rome - UNINT

Cite as:
De Nisco Alessandro, Oduro Stephen (2020), Partitioned country of origin effect on consumer behavior: a meta-analytic review of empirical evidence. *Proceedings of the European Marketing Academy*, 11th, (84077)

Paper presented at the 11th Regional EMAC Regional Conference, Zagreb (online), September 16-19,2020

Partitioned country of origin effect on consumer behavior: a meta-analytic review of empirical evidence

Abstract: This study proposes a quantitative assessment of the results of research on partitioned country of origin using a meta-analysis. The authors systematically reviewed a total of 81 independent samples in 64 empirical papers published in the last 30 years, involving 25,483 respondents and 1,239 effect sizes, to assess: a) the overall effect of selected COO sub-components (*country of assembly*, *country of brand*, *country of design*, *country of manufacture*, and *country of parts*) on product evaluation, brand evaluation, and purchase intentions; and b) the effect of selected methodological and theoretical characteristics of the studies (e.g., number of cues, sampling procedure, product type, study design, etc.) on the variance of the results. Findings reveal that partitioned country of origin dimensions have a positive, significant influence on consumer behavior in terms of product evaluation, brand evaluation, and purchase decision. The study contributes to the advancement of COO research by facilitating empirical and quantitative assessments of the theoretical and methodological shortcomings that affect the relevance and generalizability of this field of study, identifying and proposing potential avenues for further research.

Keywords: country of origin, partitioned country of origin, meta-analysis, literature review

1. Introduction

Literature on international marketing has provided reliable support to the notion that country of origin (COO) biases play a significant role in influencing the perception of foreign products and brands: German cars, Italian shoes, and French wines, for example, are generally perceived and evaluated differently from, say, USA cars, English fashion and Californian wines. Since the seminal contribution of Dichter (1962) noted that a product's country of origin might exert a "tremendous influence on the acceptance and success of products" (p. 116), literature in this field abounds with examples and research evidence in support of such an argument (Roth & Diamantopoulos, 2009).

According to Biswas and Chowdhury (2011), research on COO effects falls in three distinct categories: (1) research examining the influence of country image on consumers' purchases and product evaluation (Bilkey & Nes, 1987; Eroglu & Machleit, 1988); (2) studies dealing with consumers' perceptions about different countries (Leonidou, Palihawadana & Talias, 2007), and (3) studies researching *partitioned country images* on consumers' product evaluations.

In particular, since the mid-1990s, a significant portion of studies have decomposed the COO construct from a *single measure* or categorical experimental treatment (based on target country) to a *multidimensional operationalization* that allows for testing of different COO sub-categories such as country-of-design (COD), country-of-parts (COP), and country-of-assembly (COA), country of manufacture (COM), country of brand (COB), or country of parts (COP). Research suggests that decomposing COO into its sub-dimensions enables a fuller understanding of COO effects (Insh & McBride, 2004). Moreover, the drastic reconfiguration of global sourcing and the rapid growth of manufacturing relocations in newly industrialized countries characterized by low production costs raises critical questions on the effect of delocalization strategies on consumers' perceptions.

In general, results from research on partitioned country of origin have shed some light on consumers' evaluation of products associated with different countries. For example, Chao (1993), in a study on a television set, found that consumer country of design (COD) and country of assembly (COA) can affect consumer evaluations of design and product quality. Such results were confirmed in subsequent research by Chowdhury and Ahmed (2009), who found a positive influence of COA, COD, and COM on consumers' evaluations of product design and manufacturing excellence. Interestingly, the effect of country image sub-components seems to be moderated by the perceived level of product complexity. Both research from Ahmed and d'Astous (1995) and Hamzaoui and Merunka (2006) found that COD and COM have different effects depending on the product category considered and that COD's effect increases with high levels of product complexity and consumer involvement, whereas with weaker involvement product quality evaluations are based more on functional dimensions related to COM. Similarly, Batra et al. (2000) suggested that the COD effect is stronger for product categories that have more social signaling value.

Despite the extensive amount of research that has been conducted on the country of origin effect in the last thirty years, this field of research has been the object of growing criticism due to its lack of methodological and theoretical consistency (Kock, Josiassen & Assaf, 2019), which negatively affects the relevance and generalizability of results. In a recent review conducted by Lu, Heslop, Thomas, and Kwan (2016), it was reported that there is a growing decline in the appeal of the country of origin research. Therefore, the authors suggested a number of viable research directions to renew the interest in the field, stressing emphatically, among the other things, "the paucity of research on service and *hybrid products*" (p. 844).

Additionally, while numerous scholars have examined the association between partitioned country of origin and consumer behavior—product evaluation, brand evaluation, and purchase intention, they have produced inconclusive results about the associations' sign and magnitude. This absence of consensus in the mainstream literature has unearthed a hot, long-standing debate regarding the extensive inconsistencies and conflicts in the empirical results produced, which lends credence to meta-analysis as a suitable method to employ to shed light on the discrepancies in the existing empirical research.

Therefore, this paper aims to contribute to the revitalization of the country of origin research by proposing a quantitative assessment of empirical research on partitioned country of origin studies over the last thirty years using a *meta-analysis*. A meta-analysis reviews prior studies in a systematic and structured way and aggregates results, thereby making it possible to quantify and summarize the commonalities and variances in the studies (Van Vliet et al., 2016), and providing tangible and additional evidence that could not be found in a single study (Stanley & Doucouliagos, 2012). Although some previous COO studies (e.g., Wang & Yang, 2008; Peterson & Jolibert, 1995; Verlegh & Steenkamp, 1999) employed this research approach, they were limited to the evaluation of general COO effects without considering the partitioned country of origin, particularly COO sub-components—COM, COA, COB; COD, and COP. Moreover, these studies used the meta-analytic approach nearly about 12 or 20 years ago, which does not consider the more recent developments and methodological assessments in this research stream. The thrust of the present is to fill this lacuna.

The remainder of the study is organized as follows. The Methodology sections will present the main methodological steps of the meta-analysis: a) criteria for inclusion of the empirical studies; b) selection of the study characteristics that are expected to cause systematic differences in the results of individual studies; and c) coding and analysis of the effect sizes. The Results section will describe the results of the meta-analysis and assess the impact of the various selected theoretical and methodological characteristics on the variance of results, thus providing a better understanding of the factors that may affect the consistency and generalizability of this field of study. Finally, the conclusion section will discuss the research implications and provide guidelines for further research.

2. Methodology

Analogous to most meta-analyses, we started with the identification and selection of a broad range of partitioned COO studies. This examination targeted scholarly peer-reviewed, empirical, English language, full-text online articles contained in the following online databases: *Business Source Complete*, *Science Direct*, *ABI Proquest*, *Emerald Insight*, *Web of Science*, and *Scopus.* The main keywords included the following: *partitioned country of origin*, *country of assembly* (COA), *country of brand* (COB), *country of design* (COD), *country of manufacture* (COM), and *country of parts* (COP). We allowed for these keywords to appear either in the title, abstracts, or and keywords in all fields of the papers contained in the databases. Data collection was limited to 1919-2019, and on completion of the search process, we had obtained an initial output of 157 articles.

For the second step, we carefully screened the abstracts of the papers and selected studies for inclusion in the meta-analysis based on two criteria. First, the meta-analysis involved only the papers that were devoted to the empirical analysis of partitioned country of origin dimensions in association with either purchase decision, brand evaluation, or product evaluation. Hence, we identified and excluded articles that examined the COO effect using a general country image, product country image, and country-specific product image. Second, we included in the meta-analysis articles that reported the r family (correlation coefficients) of effects, although the d family (measures of the standardized difference between group means) is employed in other meta-analytic studies.

We opted for the *r family* because they allow for the analysis of more than two groups compared to the *ds* that is limited to only two-group comparisons. Plus, r_s can be more simply interpreted in terms of practical importance than ds (Rosenthal & DiMatteo, 2001). This way, our analysis included only those studies that reported the correlation coefficient or its variants (F-statistics, T-statistic, beta, regression coefficient, etc.) (Rosenthal & DiMatteo, 2001; Rosenthal, 1994). Thus, papers that did not provide adequate statistical data to calculate the effect size (i.e., correlation coefficients between the variables or the required data to obtain them using conversion methods (Borenstein, Hedges, Higgins, & Rothstein, 2009; Peterson & Brown, 2005) were excluded. This resulted in a total of 81 independent samples reported in 64 empirical papers, with a total of 25,483 respondents and 1239 effect sizes.

Next, we followed procedures applied in other meta-analyses in marketing for the development of the final database (Santini et al., 2019; Wang & Yang, 2008; Kirca et al., 2005). We

first prepared a coding sheet or form that highlighted the information to be extracted from each study to minimize the coding error (Lipsey & Wilson, 2001). We coded five (5) theoretical characteristics and seven (7) methodological characteristics of each study. The theoretical characteristics were:

1) partitioned country of origin dimensions (*country of assembly* (COA), *country of brand* (COB), *country of design* (COD), *country of manufacture* (COM), and *country of parts* (COP)
2) number of cues *(multiple or single)*;
3) outcomes (*brand evaluation, product evaluation*, and *purchase decision)*;
4) product type *(general or specific)*;
5) product category *(automobile, textiles/shoes/apparels, consumer electronics/computers, industrial products, and others)*.

With respect to the methodological characteristics, we mapped and retained the following information:

6) the country of data collection *(USA, others)*;
7) the country of the product/brand under evaluation *(USA, others)*;
8) the sampling unit *(students, general consumer, and managers/purchasing agents)*;
9) the sampling technique *(probability or non-probability*);
10) the study design *(survey or experiment)*.
11) Respondents size (*less than 151 or 151 and above*)
12) Theories usage (*with no theory or with theory*)

In all, a total of 1,239 effect sizes were included in the analysis. The coding reliability was checked by having each co-author re-read the coded articles, after which several meetings were held to discuss coding discrepancies, and where necessary, to clarify and amend classifications and conversions of the indices. Following the general computational procedures of effect sizes (Rosenthal & DiMatteo, 2001), we converted all the r variants (F-test, T-test, regression coefficient, etc.) to r. For studies that reported only p-values, we converted the p-values to standard normal deviate Z based on a range given: for $p < 0.05$, $Z = 1.645$; for $p < 0.01$, $Z = 2.326$; for $p < 0.001$, $Z = 3.090$; for non-significant effect, $Z = 0$. Then, the standard normal deviate Z values were transformed into the corresponding r (Rosenthal & DiMatteo, 2001, p. 72). Subsequently, we transformed the effect sizes into Fisher's z-coefficients, which were then weighted by an estimate of the inverse their variance (N-3) to approach a standard normal distribution and to give greater weight to more precise estimates. Finally, the coefficients were re-converted to effect sizes r_s (Hedges & Olkin, 1985).

Meta-analytic research was analyzed using one of two models: fixed effect and random effect models (Zubeltzu-Jaka, Erauskin-Tolosa, & Heras-Saizarbitoria, 2018; Borenstein et al., 2009). In the case of the fixed model, the set of the articles included in the sample of analysis disregard the heterogeneity of the sample and instead assume a unique and true value of the effects between variables with sampling error as the only observe variability (Borenstein, Hedges & Rothstein, 2007). In contrast, the random model assumes that heterogeneity or variability across the studies may result from not only the sampling variability but also from the differences in operationalization and external validity elements (Hunter & Schmidt, 2004). For this study, given the amplitude and variability of the collected studies and the fact that the impact of partitioned country of origin on perception is not homogenous in different circumstances, the random effect of the effect-size method was considered the appropriate method, hence adopted.

The homogeneity correlations in the studies were examined using the procedures suggested by Hedges and Olkin (1985). Theoretical moderators that could potentially influence the force of effect sizes were evaluated as cues, product type, and product category. As well, the type of design, sampling technique, sampling unit, country of data collection, and brand/product origin, theory usage, and respondents' size were examined as possible methodological moderators that could influence the force of the effect sizes (Hunter & Schmidt, 2004). It is also highlighted that the relative 95% confidence intervals were calculated to establish the significant relations, that is, significant when confidence intervals do not include zero (Glass, 1977). About the significant relations, the index of

fail-safe number, which estimates the number of non-significant or unpublished papers that are required to refute the findings of this study (Rosenthal, 1979), was calculated. In addition to the effect size means, we reported the z-score, p-values, Q-test (homogeneity), Higgin's heterogeneity test (I^2).

In a meta-analytic study, effect sizes measure the magnitude of the relationship between two variables. In this study, the correlation coefficients denoted the degree of association between partitioned country of origin constructs and perception of consumers (i.e., product evaluation, brand evaluation, and purchase decision). The data analysis was performed using David Wilson MACROS syntax for meta-analysis in SPSS.

3. Results

The overall mean effect size (r) of the 1,239 effect sizes recorded in our database was 0,40, which may be classified as a moderate effect (Cohen, 1988). The significance of the relationship is examined by observing the effect size confidence interval; that is, the confidence interval does not include zero: [0,38; 0,43). The Rosenthal fail-safe test for the overall mean effect size is 8747, which demonstrates that the amount of unpublished papers needed to make the observed effect size negligible is enormous, and the likelihood of any publication bias is very scant.

At a more disaggregate level, the largest positive effects are obtained for the "COB" and "COM" partitioned variables, which have mean effect sizes of r=0,32 and r=0,27, correspondingly. The significance of these relationships is shown by the effect size confidence intervals, which must not include zero (0,21; 0,42; 0,20; 0,33), respectively. In general, these results help to confute and confirm conventional wisdom about the country of origin research. For example, the significant effect size differences among the different country of origin dimensions (COM, COA, COB, COD, COP) confirm that consumers can distinguish such COO components (Chao, 1993, 2001) and that they "compartmentalize" country of origin information when evaluating products and making purchase decisions (Hamazaoui-Essoussi, 2010). This result supports the notion that consumers infer country associations firstly from the origin associated with the brand name (Country of brand - COB) rather than from where the product was designed or manufactured or assembled (e.g., Thakor, 1996).

Moreover, results indicate that the partitioned variables have the strongest positive effect on purchase decision (r=0,47), followed by brand evaluation (r=0,20), and product evaluation (r=0,18), in that order. This result is further buttressed by our analysis of the interactions between the partitioned variables and outcomes. It is shown that each partitioned variable interacts more strongly with purchase decision than with all the other outcomes—product evaluation and brand evaluation. However, the strongest interaction is between COB and purchase decision (r=0,15; CI= 0,15; 0,16), which confirms earlier findings (Koschate-Fischer et al., 2012; Jian & Guoqun 2007), that COB may not directly affect product evaluation but purchase intention. At the same time, this result contradicts the notion that country of origin effect is more likely to affect consumers' evaluation of products and brands than purchase intentions (e.g., Chao, 1993; Chowdhury & Ahmed, 2009).

To test the robustness of these results, we report both Q-test and I^2 statistics. The null hypothesis of homogeneity was rejected (1258,7; $p<0.000$), implying that the variance in effect sizes may be attributed not only to the sampling error but also to the differences in operationalization and external validity elements (i.e., the influence of the selected 12 study characteristics). The I^2 statistics show that the reported positive relationship of each partitioned country of origin dimension and outcomes is heterogeneous, hence the need for the introduction of moderators to minimize the variability.

Therefore, in our analysis, we present the mean effect sizes for the five theoretical and seven methodological moderators under investigation, shown in Table 1. The results show that the relationships between the selected study characteristics and the effect sizes were statistically significant at $p\leq0.05$ for eleven of the twelve independent moderators (except sampling technique). Therefore, even by taking into account the small samples associated with some effect sizes and the dramatic sample size differences within certain independent variables, our results suggest that the

selected studies' characteristics moderate the relationship between the partitioned country of origin and consumers' evaluations.

First, the result of the effect of single versus multi cue studies was consistent with expectations based on previous literature (Peterson & Jolibert, 1995; Verlegh & Steenkamp, 1999), confirming that single cue studies produce larger effect size than multi cue studies (r=0,28) and (r=0,18), with 95% CI of (0,16; 0,20; 0,26; 0,30), respectively.

Second, the significant effect size differences related to the stimulus product category (automobile, textiles/shoes/apparels, consumer electronics/computers, industrial products, others) confirm that country of origin sub-components represent an important determinant of consumers' evaluation especially for a product with social status meanings (automobiles, apparels), but not for technologically complex products (consumer electronics, computers). These findings supported the conclusions of Hamzaoui and Merunka (2006) while contradicting results reported by Eroglu and Machleit (1989) and Hamzaoui-Essoussi (2010).

Third, our finding reveals that the effect of the partitioned variables on the outcomes is significantly moderated by whether the study is examining a specific product or general product. It was revealed that studies examining specific products produce larger effect sizes (r=0,69) than general product studies (0,19). The CI effect size intervals reveal the significance of this relationship, and a step further analysis of the mean difference (md=0,5; t=25) shows that this moderating effect is significant, indicating that the specific or general nature of the product can influence results.

Fourth, a common criticism of country of origin research is that generalizations regarding country-related consumption behavior are often based on samples from the United States and/or are related to the evaluation of US products. Our findings confirm that country of origin research is mostly US-based – since the overall number of effect sizes collected on US respondents doubles the number of effect sizes collected from the rest of the world. Nevertheless, the result shows that US consumers tend to underestimate the role of partitioned country of origin dimensions when evaluation products/brands compared to non-US respondents (r=0,31) and (r=0,17), respectively.

Our examination of the mean difference between these effect sizes, in addition to the confidence interval, demonstrates that country of data collection plays a significant moderating role in the association between partitioned country of origin and consumer behavior (md=0,14; t=14.01). This contradicts results from a previous meta-analysis on the country of origin research conducted by Peterson and Jolibert (1996). Again, we found that the country of brand origin significantly moderates or influence results. We discovered through the analysis that there is a significant difference between the evaluation of US (r=0,16) versus not-US products (r=0,24). The confidence interval of the effect sizes shows the significance of this, and as well, the mean difference was significant (md=0,08; t=8,01)

Another criticism of country of origin studies is the common use of student samples, which leads to poor generalizability. In particular, some researchers have pointed out that country of origin effect is smaller for students compared to general consumers because the first are younger and usually higher educated than the latter. Therefore, since it has been shown that country of origin effect is usually lower for young and highly educated consumers (Usunier, 1996), it was argued that the use of student samples might yield smaller effect sizes compared to representative consumer samples. This assumption was not confirmed by our results (students; r=0,22; general consumers; r=0,21; managers=0,38), but confirms previous meta-analysis (Peterson & Jolibert (1995; Verlegh & Steenkamp, 1999).

Furthermore, earlier meta-analysis had hinted that larger sample sizes are likely to generate greater effect sizes than the smaller sample size (Wang & Yang, 2008). Responsively, we examined the respondents' size to find out their potential effect on results, grouping them into large and small sample sizes (Gullardo-Vazquez et al., 2019). It was found that sample size plays a significant moderating role, since the sample size greater equal or greater than 151 produces larger effect size (r=0,33) than the one less than 151 (r=0,20), with 95% CI of (0,28; 0,38) and (0,19; 0,22), respectively. Moreover, our analysis of the mean difference (md=0,13, t=6.5) was significant.

As well, we tested the potential moderating effect of theory usage, exploring any difference between the studies that used theories and the ones that made no use of theory (Lu et al., 2016). We found that studies with theories produce larger effect sizes (r=0,44; CI=0,41; 0,48) than no theory studies (r=0,39; CI=0,38; 0,41). A step further examination of the mean effect difference (md=0,05; t=5,05) is significant, indicating the significant moderating role of theory usage in the study of the country of origin research. In fact, one of the major criticisms in this research stream is a lack of theory adoption and development (Lu et al., 2016). This result, therefore, is a wake-up call to future researchers.

Moreover, literature hints that the sampling technique adopted in a study may influence results, which has been confirmed by previous meta-analysis (Wang & Yang, 2008). Analogously, we tested the significant difference between studies based on probability sampling and those based on non-probability sampling. Intriguingly, while we discovered that the studies based on probability sampling has the strongest effect size (r=0,219) compared to non-probability sampling (r=0,203), we note that mean effect size difference (md=0,016; t=1,77) is not significant. This shows that the sampling technique employed in a study does not affect the variance of the effect sizes. However, this result contradicts the result of (Wang & Yang, 2008) meta-analytic review, that non-probability sampling generates a larger effect size than probability sampling and that the moderating effect is significant.

Last but not least, our study found that the effect sizes of studies based on experiments were significantly larger than the effect sizes (r=0,23) stemming from research based on surveys (r=0,21), which confirms prior research that experimental study design may generate larger results than survey (Peterson, 2001; Hedges & Olkin, 1985). This, moreover, indicates that the study design adopted does affect the variability in the effect sizes of the results (md=0,02; t=2,01).

Table 1. Meta-analysis for the relationship between partitioned country of origin and consumer behavior

	Meta r	**std error**	**z-test**	**(-) 95% CI**	**(+) 95% CI**	**p-value**	**N**	**K**	**Q-test**	**p-value**	**I^2**	**Rosenthal fail-safe N**
Overall effect	0,40	0,01	51,8	0,38	0,43	0,00	429052	1239	1258,7	0,00	96,6	8747
Partition Variables												
COM	0,27	0,04	7,63	0,20	0,33	0,00	74855	267	96,954	0,00	98,9	1148
COA	0,20	0,04	5,46	0,13	0,27	0,00	11146	243	479,87	0,00	98,2	733
COB	0,32	0,06	5,65	0,21	0,42	0,00	84744	98	231,32	0,00	97,5	531
COD	0,21	0,04	5,99	0,14	0,27	0,00	86880	272	108,59	0,00	89,0	859
COP	0,19	0,04	4,33	0,10	0,27	0,00	74120	174	247,92	0,00	91,6	482
Outcomes												
Product evaluation (PE)	0,18	0,01	22,3	0,17	0,20	0,00	33409	997	711,19	0,00	98,7	2652
Brand evaluation (BE)	0,20	0,03	7,7	0,15	0,25	0,00	54332	103	61,373	0,00	93,4	308
Purchase intention (PI)	0,47	0,02	20,9	0,42	0,51	0,00	40622	139	466,81	0,00	97,8	1153
Interactions (PV&Outcome)												
COMXPE	0,05	0,01	166	0,05	0,05	0,00	408953	1264	808,15	0,00	56,6	1226
COMXBE	0,05	0,02	57,3	0,05	0,06	0,00	129187	370	158,33	0,00	74,4	391
COMXPI	0,12	0,01	155,9	0,12	0,13	0,00	115477	406	563,77	0,00	28,2	1000
COAXPE	0,04	0,00	120,1	0,04	0,04	0,00	445559	1240	1191,07	0,00	96,0	911
COAXBE	0,04	0,00	41,4	0,04	0,04	0,00	165793	346	541,24	0,00	63,9	277
COAXPI	0,09	0,00	112,7	0,09	0,10	0,00	152083	382	946,68	0,00	59,8	713
COBXPE	0,06	0,00	121,6	0,06	0,06	0,03	418842	1095	942,52	0,00	86,1	1287
COBXBE	0,06	0,00	41,9	0,06	0,07	0,00	139076	201	292,69	0,00	31,3	257

COBXPI	0,15	0,00	114,1	0,15	0,16	0,00	125366	237	698,13	0,00	66,0	707
CODXPE	0,04	0,00	131,7	0,04	0,04	0,00	420978	1269	819,79	0,00	64,7	966
CODXBE	0,04	0,00	45,4	0,04	0,04	0,02	141212	375	169,97	0,00	45,5	311
CODXPI	0,10	0,00	123,5	0,10	0,11	0,00	127502	411	575,41	0,00	28,5	794
COPXPE	0,03	0,00	95,5	0,03	0,04	0,00	408218	1171	959,12	0,00	81,9	808
COPXBE	0,04	0,00	32,9	0,04	0,04	0,00	128452	277	309,29	0,00	10,3	208
COPXPI	0,09	0,00	89,6	0,09	0,09	0,00	114742	313	714,73	0,00	56,2	548
Theory usage												
No theory	0,39	0,01	44,97	0,38	0,41	0,02	310683	979	1139,17	0,00	96,1	6730
With theory	0,44	0,02	25,9	0,41	0,48	0,00	100093	260	108,33	0,00	92,0	2029
Respondent size												
Less than 151	0,20	0,01	25,5	0,19	0,22	0,00	10932	109	974,48	0,00	98.1	327
151or above	0,33	0,03	12,9	0,28	0,38	0,00	418120	1130	291,34	0,00	92,8	6328
Cues												
Multiple	0,18	0,01	17,2	0,16	0,20	0,00	248506	691	432,99	0,00	94,8	1743
Single	0,28	0,01	23,3	0,26	0,30	0,00	170913	509	805,51	0,00	92,9	2334
Country of data collection												
USA	0,17	0,01	18,3	0,151	0,19	0,00	278845	836	475,43	0,00	98,8	1986
Others	0,31	0,02	23,6	0,288	0,34	0,00	150207	403	766,43	0,00	97,9	2129
Country of brand origin												
USA	0,16	0,01	11,5	0,13	0,19	0,00	144213	372	138,32	0,00	97,3	830
Others	0,24	0,02	15,6	0,21	0,27	0,00	120827	327	333,07	0,00	97,7	1213
Product category												
Automobile	0,18	0,02	10,5	0,14	0,21	0,00	85336	246	187,96	0,00	96,5	624
Textiles/shoes/apparel	0,20	0,02	12,7	0,17	0,23	0,00	93706	273	135,42	0,00	98,3	825
Consumer electronics/computers	0,17	0,01	13,0	0,15	0,20	0,00	132899	390	264,00	0,00	94,6	966
Industrial products	0,16	0,02	6,9	0,12	0,21	0,00	33153	126	55,39	0,00	98,2	287
Others	0,40	0,02	21,4	0,36	0,43	0,00	84558	204	595,38	0,00	95,8	1410
Product type												
Specific	0,69	0,03	23,9	0,63	0,74	0,00	384091	1164	886,95	0,00	94,9	1489
General	0,19	0,01	25,3	0,17	0,20	0,00	44961	75	350,60	0,00	97,7	203
Sampling Unit												
Students	0,22	0,01	17,3	0,20	0,25	0,00	177378	452	652,28	0,00	98,8	1547
General consumers	0,21	0,01	21,1	0,19	0,23	0,00	245888	759	570,48	0,00	96,8	2379
Managers/purchase agents	0,38	0,05	7,5	0,28	0,49	0,00	5786	28	44,53	0,00	97,8	187
Sampling Technique												
Probability sampling	0,22	0,009	25,5	0,20	0,24	0,00	340954	1000	1013,50	0,00	96,9	3378
Non-probability	0,20	0,018	11,5	0,17	0,24	0,00	88458	239	252,90	0,00	98,6	732
Study design												
Experiment	0,23	0,02	15,9	0,20	0,25	0,00	112811	372	509,94	0,00	97,8	1303
Survey	0,21	0,01	22,9	0,19	0,23	0,00	316241	867	756,40	0,00	97,9	2809

Note: **N:** no. of observations, **K:** no. of effect sizes, **Meta r:** mean effect size (correlation coefficient), −95% CI and +95% **CI:** limits of the mean size confidence interval, **Q-test:** homogeneity test; $\boldsymbol{I^2}$**:** the ratio of the study variance due to heterogeneity.

4. Conclusion

As for our knowledge, based on the review of the extant literature, this is the first study to employ a meta-analysis to assess the results of empirical research on the partitioned country of origin effect under a variety of research conditions. In doing so, this study contributes to the advancement of this field of research by facilitating an empirical and quantitative assessment of the theoretical and methodological characteristics that may affect the validity and generalizability of results.

Based on our meta-analytic review, the following conclusions are drawn. First, the partitioned country of origin dimensions positively influence consumer behavior, with impact on purchase intention being larger than on product evaluation and brand evaluation. Second, COB showed the largest effect on consumer behavior, followed by COM and COD, in that order. Third, in terms of theoretical moderators, the number of cues, product type, and product category significantly influence the variances in the results. And fourth, regarding the methodological moderators, according to our results, theory usage, respondent size, country of product/brand origin, country of data collection, sampling unit, and study design play a significant moderating role in the direct relationship between partitioned country of origin and consumer behavior, but sampling technique does not.

Arising from these conclusions, a potential research agenda for the field would include at least five possible directions. First, since the geographical focus of the effect sizes is mostly restricted to USA, it is evident that more research is needed in a cross-national context. Second, it is clear that the adoption of a single-cue approach tends to overestimate the effect sizes. Therefore, our recommendation is to put more effort into multi-cue research projects. Third, since the theory-driven studies produce larger effect sizes than atheoretical studies, we advocate for more theory-driven studies in the near future. Fourth, the heterogeneity statistics demonstrate that the outcomes are very heterogeneous, hence there is a lucid sign to authors in the field to introduce other moderators in their examination of the partitioned country of origin—consumer behavior relationship to minimize the variability.

Lastly, in term of sampling procedure, an obvious indication from our study is that the effect size differences are strongly influenced by the sample units included in the studies; hence, the generalizability of results is penalized by the extensive use of student samples, which lead to an underestimation of the effect sizes. Conversely, our research corroborates the need to assess the evaluation of COO sub-components using purchase agents/managers. Given the growth of foreign direct investment (FDI), coupled with the increasing delocalization of multinational enterprises' operations and the subsequent fragmentation of supply chains, a vibrant understanding of how managers and purchase agents perceive and manage the complexity underlying the "decomposition" of the products' origins would provide a significant contribution to improve the managerial relevance of this field of research.

References

Borenstein, M., Hedges, L. & Rothstein, H. (2007), "Meta-analysis fixed effect vs random effects." Retrieved from *Meta-analysis. com.*

Borenstein, M., Hedges, L. V., Higgins, J. P. T., & Rothstein, H. R. (2009). Introduction to meta-analysis. Hoboken, NJ: John Wiley & Sons.

Chao, P. (1993), "Partitioning country of origin effects: consumer evaluations of a hybrid product," *Journal of International Business Studies,* Vol. 24 No. 2, pp. 291-306.

Chao, P. (1998), "Impact of country-of-origin dimensions on product quality and design quality perceptions" *Journal of Business Research,* Vol. 42 No. 1, pp. 1-6.

Chao, P. (2001), "The moderating effects of country of assembly, country of parts, and country of design on hybrid product evaluations," *Journal of Advertising,* Vol. 30 No. 4, pp. 67-81.

Gallardo-Vázquez, D., Barroso-Méndez, M. J., Pajuelo-Moreno, M. L., & Sánchez-Meca, J. (2019). Corporate social responsibility disclosure and performance: A meta-analytic approach. *Sustainability*, *11*(4), 1115.

Hamzaoui, L. and Merunka, D. (2006), "The impact of country of design and country of manufacture on consumer perceptions of bi-national products' quality: an empirical model based on the concept of fit," *Journal of Consumer Marketing,* Vol. 23 No. 3, pp.145-55.

Hamzaoui–Essoussi, L. (2010), "Technological complexity and country-of-origin effects on binational product evaluation: investigation in an emerging market," *Journal of Global Marketing,* Vol. 23 No. 4, pp. 306-20.

Han, C. M., & Terpstra, V. (1988), "Country-of-origin effects for uni-national and bi-national products. *Journal of international business studies*", Vol. 19 No. 2, 235-255.

Hedges, L.V. and Olkin, I. (1985), Statistical Methods for Meta-Analysis, Academic Press, Orlando, FL.

Hunter, J. E., & Schmidt, F. L. (2000). Fixed effects vs. random-effects meta-analysis models: Implications for cumulative research knowledge. *International Journal of Selection and Assessment*, 8(4), 275–292.

Insch, G.S. and McBride J.D. (2004), "The impact of country-of-origin cues on consumer perceptions of product quality: a binational test of the decomposed country-of-origin construct," *Journal of Business Research,* Vol. 57 No. 3, pp. 256-65.

Kirca, A.H., Jayachandran, S. and Bearden, W.O. (2005), "Market orientation: a meta-analytic review and assessment of its antecedents and impact on performance*," Journal of Marketing,* Vol. 69 No. 2, pp. 24-41.

Kock, F., Josiassen, A., & Assaf, A. G. (2019). Toward a universal account of country-induced predispositions: integrative framework and measurement of country-of-origin images and country emotions. *Journal of International Marketing*, *27*(3), 43-59.

Lipsey, M. W., & Wilson, D. B. (2000). Practical meta-analysis. Thousand Oaks, CA: SAGE.

Peterson, R. A., & Brown, S. P. (2005). On the use of beta coefficients in meta-analysis. *Journal of Applied Psychology*, 90(1), 175–181.

Rosenthal, R. & DiMatteo, M.R. (2001), "Meta-analysis: recent developments in quantitative methods for literature reviews," *Annual Review of Psychology,* 52 (1), 59-82.

Rosenthal, R. (1979), "The file drawer problem and tolerance for null results," *Psychological Bulletin*, 86 (3), 638-641.

Rosenthal, R. (1994), "Parametric measures of effect size," in Cooper, H. and Hedges, L.V. (Eds), The Handbook of Research Synthesis, Russell Sage, New York, NY, pp. 231-44.

Santini, F. D. O., Ladeira, W. J., Vieira, V. A., Araujo, C. F., & Sampaio, C. H. (2019). Antecedents and consequences of impulse buying: a meta-analytic study. *RAUSP Management Journal*, *54*(2), 178-204.

Wang, X., & Yang, Z. (2008). A meta-analysis of effect sizes in international marketing experiments. *International Marketing Review*, *25*(3), 276-291.

Zubeltzu-Jaka, E., Erauskin-Tolosa, A., & Heras-Saizarbitoria, I. (2018). Shedding light on the determinants of eco-innovation: A meta-analytic study. *Business Strategy and the Environment*, *27*(7), 1093-1103.