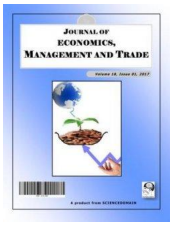

Journal of Economics, Management and Trade

21(5): 1-7, 2018; Article no.JEMT.39651
ISSN: 2456-9216
(Past name: British Journal of Economics, Management & Trade, Past ISSN: 2278-098X)

Economic Value of International Language(s) in International Trade, a Case Study of Traders (Ghana-Togo-Ghana) in Central Business District of Kumasi, Ghana

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Authors' contributions

This work was carried out in collaboration between both authors. Author EES designed the study and wrote the first draft of the manuscript. Author JA designed the questionnaire, made the data collection. Both authors EES and JA made the analysis and results interpretation. Both authors read and approved the final manuscript.

Article Information

DOI: 10.9734/JEMT/2018/39651
Editor(s):
(1) Alfredo Jimenez Palmero, Kedge Business School, France.
Reviewers:
(1) Yunus Doğan, Fırat University, Turkey.
(2) Alexander Essien Timothy, University of Calabar, Nigeria.
(3) Hery Yufrizal, Universitas Lampung, Indonesia.
Complete Peer review History: http://www.sciencedomain.org/review-history/24783

Original Research Article

Received 25th January 2018
Accepted 17th May 2018
Published 25th May 2018

ABSTRACT

International trade is the exchange of capital, goods, and services across international borders or territories, which could involve the activities of the government and individual. In Africa and Ghana to be specific, it is through international trade that items like automobiles, mobile phones, and other sophisticated machines are acquired. Along the West African belt, trade has been very key in the lives of the individual. However, different languages are used across the West African sub-region. Major amongst these languages are French, English, Twi , Hausa, and Ewe. The success of traders in the sub-region depends greatly on their ability to communicate either in written or oral form one of the aforementioned languages. Due to this barrier traders usually resort to interpreters to aid their trading activities. Meanwhile, these interpreters are not benevolent organizations-they also work at a

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charge. The primary gravity equation was modified to include the cost of individual activities such as Cost of interpreters, Transportation cost, and accommodation cost. GDP and Transportation cost are very crucial in Trade. International languages also put a cost on traders as interpreters charge about USD 8.11 on average. Governments may involve themselves by way of trade agreements to ease the trading between their respective countries and also promote language in Schools.

Keywords: Gravity model; international trade; gross domestic product; transportation cost, and accommodation cost.

1. INTRODUCTION

The trade involves the transfer of the ownership of goods or services from one person or entity to another in exchange for other goods or services or for money. Possible synonyms of "trade" include "commerce" and "financial transaction". International trade is the exchange of capital, goods, and services across international borders or territories, which could involve the activities of the government and individual. In most countries, such trade represents a significant share of the gross domestic product. Also, International Language is any of several languages, natural or deliberately constructed, used to facilitate communications among peoples with different native languages [1]. Moreover, International language, sometimes called universal language, is a language intended to be used by people of different linguistic backgrounds to facilitate communication among them and to reduce the misunderstandings and antagonisms caused by language differences [2]. For the purposes of this study, the working definition of international language shall be "a language that two or more people from different countries understands". International trade is also defined by this study as "trade activities from one country to another". International trade has flourished across the world over the century. Countries pay key attention to international trade because of its contribution to the building of their economies irrespective of the economic strength of the country concerned. In Africa and Ghana to be specific it is through international trade that items like automobiles, mobile phones, and other sophisticated machines are acquired. Contrary, Ghana, Nigeria and Brazil may be the key suppliers of cocoa to the western countries. All these are made possible through the existence of international trade.

Along the West African belt, trade has been very key in the lives of the individual. However, different languages are used across the West African sub-region. Major amongst these languages are French, English, Hausa, Twi and Ewe. The success of traders in the sub-region depends greatly on their ability to communicate either in written or oral form one of the aforementioned languages. Due to this barrier traders usually resort to interpreters to aid their trading activities. Meanwhile, these interpreters are not Benevolent organizations-they also work at a charge. Since these interpreters work at a charge it means that they have a value that impacts on trade. The question remains that: What is the value of these international languages in international trade ?, Does the value of international language has a relation with international trade ?and What must traders do concerning international languages ?.It is against this background that this study investigated Economic Value of International Language(s) in International Trade using traders (Ghana-Togo-Ghana) in Central Business District of Kumasi, Ghana. The study regressed the average expenditure of traders per each trip on amount paid to interpreters, accommodation bills and Transportation (Ghana-Togo-Ghana). The introduction of these additional regressors was to aid comparison to the fact that these additional regressors are key determinants of international trade, yet there could be unidentified force (international languages) that impact on international trade.

2. LITERATURE REVIEW

Molnar [3] found that Language skills have a wage premium that is determined by local and worldwide supply and demand for language services, and the premium is specific to each country and pair of languages. He used a novel measure of language skill premia based on professional rates for translation services from an online market. The skill premium measure relies on the bi-directional nature of the translation cost data to control both for difficulties inherent in defining a unit of and the skilled-wage component of rates. His estimation strategy was based on overlaps in ethnolinguisitic populations

to estimate the effect of the language skill premium as a cost barrier to trade, net of confounders such as trade by shared ethnic populations. Molnar [3] found that accounting for country and language specific barriers yields a three-fold increase in the estimated effect of language on foreign trade, relative to current estimates based on a shared common language.

Dennis Novy [4] explains that barriers to international trade are known to be large but due to data limitations it is hard to measure them directly for a large number of countries over many years. To address this problem He derives a micro-founded measure of bilateral trade costs that indirectly infers trade frictions from observable trade data. He shows that this trade cost measure is consistent with a broad range of leading trade theories including Ricardian and heterogeneous firms models. In an application He showed that U.S. trade costs with major trading partners declined on average by about 40 percent between 1970 and 2000, with Mexico and Canada experiencing the biggest reductions.

Ufier [5] showed that a common language lowers the transaction costs of international trade, and English is increasingly the language of international business. Ufier [5] estimates that the impact of English skills as measured by the Test of English as a Foreign Language, TOEFL, and addresses the endogeneity problem using the difficulty of learning English given one's native language as an instrument. After accounting for several covariates and endogeneity, Ufier [5] consistently find a strong effect of English abilities on income and net exports. However, there was no effect of English on FDI or Emigration, suggesting that the impacts of English language emerge may come from the changing nature of domestic industries rather than remittances or foreign investment. This suggests improving English abilities may be a useful tool on the path to development.

Dulfano [6] assessed the economic value of the Spanish language. They argue that More data emerges continually that demonstrates earnings premiums or economic benefit derived from bilingualism. They supports their arguments by citing the results of a study by the European Commission that notes a significant amount of business' was sacrificed because of poor language skills across Europe: 11 per cent of small- and medium-sized enterprises had lost a contract as a result" [7].

3. DATA, SAMPLING AND SAMPLING TECHNIQUE

The study used primary data collected from one hundred and fifty-four (154) traders that ply the Ghana-Togo-Ghana trade route. Sample size was chosen based on the availability of respondents within a thirty continuous day of the month with the assumption that at least traders would ply the Ghana-Togo-Ghana trade route once a month. Due to the weak formal education background of most of the traders both questionnaires and interviews were used to collect the data. Traders that operate in the central business district of Kumasi were considered. By implication, convenient sampling technique was adopted. The data was analyzed using STATA 11.0.

4. MODEL SPECIFICATION

As to the methods of study, Grin [8] emphasizes that the economics of language has adopted the methods of neo-classical economics, including its assumptions and arguments. Other related methods include empirical analysis, normative analysis, quantitative analysis, qualitative analysis, cost-benefit analysis and comparative analysis [8, 9]. Most popular amongst languages and economic studies is the Gravity model .It has acquired a solid reputation of good fitting; it gained respected micro foundations that allowed it to move to a mature stage; and it has dominated the literature on trade policy evaluation [10]. This study follows the Gravity model. Newton's law of gravity states that the gravitational attraction between two bodies is directly proportional to the product of their masses and inversely proportional to the square of the distance between them. According to Alonso [11], it was a Princeton astronomer, James Q. Stewart, who in the 1940s first proposed that similar specifications could have wide application in the social sciences. He found many strong correlations using this functional form, replacing mass by population and gravitational force by some measure of interaction between locations. The gravity equation was subsequently applied to many issues in regional and location economics, with considerable empirical success. The basic model for trade between two countries (i and j) takes the form of:

$$T_{ij} = \frac{\Phi \Psi^{\gamma 1}_{i} \Psi^{\gamma 2}_{j}}{\Omega^{\delta}} \quad (1)$$

Where T_{ij} is the trade flow, Ψ is the economic mass (Gross Domestic Product) of each country, Ω is the distance and Φ is a constant. The model above could be linearized as

$$\ln T_{ij} = \gamma_0 + \gamma_1 \ln \Psi_i + \gamma_2 \ln \Psi_j - \delta \ln \Omega \quad (2)$$

where $\gamma_{0=\ln\Phi}$. The coefficients in (2) are the elasticity of trade flows. The δ in real Newtonian gravity equation is -2. Since the gravity model for trade does not hold exactly, in econometric applications it is customary to specify

$$T_{ij} = \frac{\Phi \Psi^{\gamma 1}_i \Psi^{\gamma 2}_j \theta_{ij}}{\Omega^{\delta}} \quad (3)$$

where θ_{ij} is the stochastic error term whiles the remaining variables continue to be as defined in (1). And the log-linear equation becomes

$$\ln T_{ij} = \gamma_0 + \gamma_1 \ln \Psi_i + \gamma_2 \ln \Psi_j - \delta \ln \Omega + \varepsilon_{ij} \quad (4)$$

Where $\ln\theta_{ij} = \varepsilon_{ij}$

Trade is a dynamic process and that several authors have proposed a dynamic gravity equation in place of the traditional static gravity equation, including Olivero and Yotov [12], and Campbell [13]. The dynamic gravity equation, in its most general form, posits that bilateral trade between country i and j is a function of the size of each country, the current trade costs, and the past trade costs.

$$\ln (T_{ijt}) = \ln (\Psi_i \Psi_j) - \ln(\tau_{ijt}) - \ln(\tau_{ijt-1}) \quad (5)$$

Where T_{ij} is the trade flow,Ψ is the economic mass (Gross Domestic Product) of each country, τ_{ijt} and τ_{ijt-1} are the current trade costs, and the past trade costs respectively.

The dynamic gravity model is modified to capture the cost on individual activities including Cost of interpreters, Transportation cost, and accommodation cost. Besides, trade flows is replaced by the total amount a trader spends per each trip. Therefore the modified gravity model specification is given as

$$\ln T_{ij} = \gamma_0 + \gamma_1 \ln \Psi_i + \gamma_2 \ln \Psi_j - \Sigma \ln \rho_{ijt}^{\delta} - \Sigma \ln \rho_{ijt-1}^{\lambda} + \mu_{ij} \quad (6)$$

where γ_0 is a constant, γ_1 and γ_2 are elasticity of Trade flows with respect to Gross Domestic product in Country i and j respectively. δ ($\delta_1,\delta_2,\delta_3$) are the elasticity of Trade flows with respect to current trade cost (Cost of interpreters, Transportation cost, and accommodation cost). λ ($\lambda_1,\lambda_2, \lambda_3$) are the elasticity of Trade flows with respect to past trade cost (Cost of interpreters, Transportation cost, and accommodation cost). The model could be expanded as follows

$$\ln T_{ij} = \gamma_0 + \gamma_1 \ln \Psi_i + \gamma_2 \ln \Psi_j - \delta_1 \ln \rho_{11} - \delta_2 \ln \rho_{21} - \delta_3 \ln \rho_{31} - \lambda_1 \ln \rho_{10} - \lambda_2 \ln \rho_{20} - \lambda_3 \ln \rho_{30} + \mu_{ij} \quad (7)$$

From (7) the parametric coefficients are the respective elasticity. However, the constant term γ_0 continues to remain in the log of the Φ. The purpose of this study was primarily to use the dynamic gravity model. However, due to trader's inability to provide adequate data, the dynamic model was ignored and the primary gravity equation was modified to include the cost on individual activities including Cost of interpreters, Transportation cost, and accommodation cost. The equation (4) becomes

$$\ln T_{ij} = \gamma_0 + \gamma_1 \ln \Psi_i + \gamma_2 \ln \Psi_j - \Sigma \ln \rho_{ijt}^{\delta} + \varepsilon_{ij} \quad (8)$$

The variables are as defined in the aforementioned paragraphs. It should also be observed that the distance between the countries under consideration were proxies by the transportation cost.

5. RESULTS AND DISCUSSION

i. What is the value of these international languages in international trade?

The table below shows the value of the international languages and a proxy is by how much traders pay to interpreters. The value provided is an average of all the 154 respondents. The Table 1 shows that on average traders pay an average of eight Ghana Cedis (GHS 8.11). This is equivalent to USD 2.04 (at an exchange rate of GHS 3.96 per dollar). The table also shows that traders pay a minimum of GHS 0.5 and a maximum of GHS40 for the services of interpreters. Indeed, this is relatively a bigger value in Ghana since many people live on less than a dollar daily.

International languages is, therefore, deemed to have a recognizable value, especially in trade. Governments may involve themselves by way of trade agreements to ease the trading between their respective countries and also promote language in Schools.

ii. Does the value of international language have a relation with international trade?

The log-linear regression in table 2 suggests that trade flows respond to changes in interpreters cost, though it was statistically insignificant.

iii. What must traders do concerning international languages?

- ❖ Language is seen to have a value in trade as indicated by Table 1. Therefore, employing the services of interpreters is likely to swell the cost of trade. Henceforth, basic knowledge in these trade languages would help. Traders must learn international languages starting with at least the basic terms used in trade through adult education. Adult education is recommended due to the fact that most of the traders are busy and may not have the luxury of time to acquire formal education.
- ❖ Find an interpreter who he/she may work with constantly in order to make room to bargain on cost and to reduce fraud**.**

- **Log-linear results of the gravity model**

Table 2 shows the elasticity of trade flows with respect to the variables under consideration between the countries. It is observed that the log of transportation cost (Transport) is inversely related to the log of trade flows (-.1889775). Technically trade flows are inelastic to transportation cost. That is trade flows are less responsive to changes in transportation cost. In this study, transportation cost was used as a proxy for the distance between these two countries and thus the distance could not serve as a barrier to trade between Ghana and Togo. This may be due to the closeness of the two countries. The results also suggests that countries sharing common borders are like likely to trade more than countries that are far distant from each other.

The log of gross domestic product (GDP) of both countries (GDP_GHANA and GDP_TOGO) had a positive impact on the log of trade flows between the two countries. However, the responsiveness of trade flows to the GDP in each country is different. The responsiveness of trade flows to Ghana's GDP is elastic (1.034284) whiles the trade flows responsiveness to Togo's GDP is inelastic (.0348226). This means that Traders that ply the Ghana-Togo-Ghana trade route are more responsive to income changes in Ghana than to Togo income changes. The reason could be that traders are more concern about the goods that they bring and the market availability in Ghana. Though this sound partial since some of the traders may also take some goods to Togo for sale. However, this is the obvious truth. Statistically, both variables were significant. Trade flows are inelastic to Accommodation cost. That is traders are less concerned about the accommodation costs. This may also imply that it is possible for some of these traders to do a return journey without sleeping. Some also use their busses as a place for sleeping. Indeed it common among traders to sleeping in buses. Some do this with the aim to stay close to other traders. Meanwhile, this variable was statistically insignificant. Trade flow between Ghana and Togo is inelastic (-.0159572) to Interpreters cost (INTERPRETERS). This means that trade flows are less responsive to the cost of interpreters. Traders disregard the effect of cost in employing interpreters when trading. This could also be due to the fact that the amount paid as interpretation cost is so insignificant to discourage trade. Moreover, since Ghana and Togo share a common border, the traders themselves might have been fluent in the language used for the trade. In this regard, traders may not be impeded with the language barrier. Though log of the cost of interpretation had a negative impact on the log of trade flows, it was statistically insignificant.

In the absence of these variables discussed the results suggests that there could still be traded and it was statistically significant as shown by the constant term (_cons=.7379271). This means that other variables could be behind the trade flows but were not captured. These variables are left for future studies to find out.

Table 1. Value of international languages

Variable	Obs	Mean	Std. Dev.	Min	Max
Interpreters	154	8.105578	7.181351	.5	40

Source: Authors' Construction, 2017

Table 2. Log-linear: The gravity model

Trade Flow	Coef.	Std. Err.	t	P>|t|	[95% Conf. Interval]	
Transport	-.1889775	.0811599	-2.33	0.021*	-.3488376	-.0291173
GDP_GHANA	1.034284	.0090057	114.85	0.000*	1.016545	1.052022
INTERPRETERS	-.0159572	.0514452	-0.31	0.757	-.1172885	.085374
GDP_TOGO	.0348226	.0203487	1.71	0.088***	-.0052582	.0749034
ACCOMMODATION	-.3001314	.1868022	-1.61	0.109	-.6680746	.0678117
_cons	.7379271	.2917336	2.53	0.012*	.1633012	1.312553

*(*Significant at 1%,**Significant at 5% and , *** Significant at 10%. Adj R-squared = 0.9884)*
Source: Authors' Construction, 2017

6. CONCLUSION AND RECOMMENDATIONS

The study has shown that variables like the GDP and Transportation cost are very crucial in Trade. That is traders are very much concerned about the income levels of where they sell their goods. In this regard when the country is experiencing a booming GDP the expectation is that trade would also boom. This also implies that trade flows may respond positively to income levels of the countries involved. It is imperative to ensure that countries continue to provide a cheaper means of transportation such as providing railway lines to facilitate trade. This, in the end, would push up trade between countries. Interpretation cost may not be significant but is important to organize adult education for traders on simple trading terms. This would help traders do away with the cost involved in employing people to do the interpretation. In this regard, traders would be more comfortable in having a direct dealing with each other. The ability for traders to speak fluently may also help to curb the incidence of fraud as traders may understand whatever each other says. In trade, communication is key to a sustained relationship. Meanwhile, it is also recommended that traders are able to find better accommodation other than using their cars as a place for sleeping. In the nutshell, governments may involve themselves by way of trade agreements to ease the trading between their respective countries.

7. FOR FUTURE STUDIES

It is recommended that future studies take into account the need to go beyond bilateral trade flows and thus can include more than two countries (Multi-lateral trade). It is also suggested that future studies are able to organize data that may suit the estimation of the dynamic gravity model. Since the constant was statistically significant, it means that without variables like Gross Domestic Product, cost of interpreters, Transportation cost, and accommodation cost there would still be trade flows between Ghana and Togo. This also suggests that other factors are responsible for such constant value. From the literature variables like the closeness of the two countries and level of industrialization in each country could account for such constant value. It is therefore recommended that future studies expand the variables to include these variables.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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Peer-review history:
The peer review history for this paper can be accessed here:
http://www.sciencedomain.org/review-history/24783