**F1**
**Sultan Qaboos University**
**Research Department**
**Research Proposal**

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**CO-INVESTIGATORS (other investigators contributing significantly to the proposal)**

**EXPECTED PROJECT DURATION**

3 Years

**GRANT REQUESTED (RO)**

**Total: RO 5000**

| | | |
|---|---|---|
| Year 1:RO 1700 | Year 2: RO 2650 | Year 3:650 |

**SHORT TITLE**

The role of trade facilitation and non- tariff barriers in the context of increasing regional integration : The case of Oman and the Indian Ocean Rim Association (IORA)

**KEY WORDS**

Trade facilitation, Non-tariff barriers, IORA, Oman

**THEMES** *(Environmental and Biological, Energy and Non-renewable Resources, Life and Health Sciences, Humanities and Social Sciences, Information and Communication Systems, Fundamental, Materials, Educational, Industry-related)*

*Humanities and Social Sciences*

**EXPECTED BENEFICIARIES**

**Sultan Qaboos University, private businesses, Ministry of Industry and Commerce**

**SUMMARY**

Oman has been involved in various regional trade integration within the MENA region but has also displayed longstanding Indian ocean connection with the aim to diversity its trading partners and market opportunities. The Indian ocean has always been a trade nexus connecting Asia, the Middle East and Africa and has received new impetus in the course of the current decade. Along with other countries of the region, Oman created in 1997 the Indian Ocean Rim Association (IORA) with the objective of promoting trade liberalization through trade and investment facilitation. However, although the Indian ocean is home to 40% of global trade, intra-trade among IORA countries amounts to a quarter of their world

trade, a relatively low figure compared to the other main region trade blocs such as the EU, NAFTA and APEC. It is argued that commitments by member countries to harmonize trade policy with respect to tariff, non-tariff barriers (NTBs), customs and other trade facilitating measures would potentially enhance regional integration and reduce the intra-trade performance gap. The overall objective of this research project is to assess the prevalence of NTBs in the IORA region and analyze the impact of non-tariff measure (NTMs) and trade facilitation on the economy of IORA members, giving special consideration to the issue of technical measures (SPS and TBT) and trade facilitation indicators. Specifically the project will a) analyze the IORA trade patterns and assess the prevalence of NTMs in the region using the region NTMs notifications to WTO; b) estimate the ad-valorem tariff equivalents (AVE) equivalent of non-tariff measures with a particular focus on sanitary and phyto-sanitary measures and technical barriers to trade; and c) evaluate the economy-wide and sectoral effects of deepening IORA region through trade policy reforms, including more efficient trade facilitation measures. A three step approach will be used to achieve the objectives of the project. In a first step, the study will specify an augmented gravity model to estimate, using various econometrics techniques, the ad-valorem equivalents of non-tariff measures. The second step is to use a general equilibrium model, GTAP to analyze trade policy reforms based on the estimated ad-valorem equivalents. The third step is to simulate improvement in the efficiency of trade facilitation measures using built-in GTAP techniques.

**Does the proposal need to be cleared by the University Ethics-In-Research Committee?**
*(If yes, tick the correct item)*

A. The Animal Research Ethics Board ☐
B. The Medical / Clinical Research Ethics Board ☐
C. The Social Research Ethics Board ☐

**OUTLINE OF PROPOSED RESEARCH**

Proposed research outline must include at least the following sub-sections:

## 1. INTRODUCTION AND PROBLEM STATEMENT

Oman has been traditionally linked in world geographical and political classifications to the GCC and the MENA region but has for long maintained strong economic ties with regions outside its traditional geographical space, most importantly the Indian Ocean region. Given these ties and common interest, Oman along with other Indian ocean countries have established in 1997 what is currently called the Indian Ocean Rim Association (IORA) (Wippel, 2015). Oman is strategically located in the Indian Ocean (Strait of Hormuz) with direct seaport access to all countries of the region. The Indian Ocean has always been a trade nexus connecting Asia, the Middle East and Africa and has received new impetus in the course of the current decade (financial Times 2015). Growth prospects indicate that many countries in the rim of Indian ocean could dominate growth in the next generation (Center of International Studies,2015).

The IORA is a regional economic association created on the principle of open regionalism with the objective of promoting liberalization through trade and investment facilitation. The regions intra-trade and export to the world has been quite robust despite no legal binding to promote trade within IORA. However the intra-trade level is still relatively low (particularly in recent years) compared to other trade blocs such as the European Union (61.65%), NAFTA (50.35%) and APEC (69.29%). Commitments by member countries to harmonize trade policy with respect to tariff and address non-tariff barriers (NTBs), customs and other trade measures would potentially enhance regional integration and reduce the intra-trade performance gap (Mohanty & Dash, 2015).

The incidence of non-tariff measures (NTMs) within the Indian Ocean is relatively high

based on the notification of NTMs reported globally to WTO. About 13 percent of the global notifications of NTMs were reported by IORA countries. In IORA, Technical Barriers Trade (TBT) is the most applied form of NTMs, followed by Sanitary and phyto-sanitary (SPS) measures. However, the agricultural sector had more incidence of SPS than TBT measures. In fact, the agricultural sector accounted for 39 percent of total incidence of NTMs in the region which follows the global trend of intensive use of NTMs on agri-food products compared to manufacturing products (UNCTAD, 2018).

In addition to the high incidence of NTMs in the IORA region, the International Trade Center company level surveys pointed to the prevalence of burdensome administrative procedures linked to the application of NTMs. Long Procedures related to custom practices, documentation and licensing add to trade cost and reduce the ability of exporting firms to compete in regional and world markets. For example, container cost is still relatively high in IORA African countries and time to export and import is still high across the whole region. This is reflected in the low ranking of trading across border of most IORA countries, which requires the need for trade facilitation (TF) measures.

## II. LITERATURE REVIEW

The global use of NTMs has increased in recent years to support a wide variety of public trade and non-trade policy objectives, some of which aim to address market failure in areas related to the environment, human, animal and plant health. While legitimate, some of these NTMs can become trade barriers increasing trade cost more than necessary and reducing the gain prospects of international trade (Bektasoglu et al., 2017; De Melo & Nicita, 2018; Fugazza & Maur, 2008).

There has been a conceptual debate as to the use of non-tariff barriers (NTBs) to characterize non-tariff measures (NTMs)[1]. NTMs can become NTBs depending on the intended use of application (ITC, 2017). NTMs are any measure other than tariff which have the capacity to qualitatively or quantitatively distort trade within border or across borders (Fugazza & Maur, 2008;). More comprehensively, NTMs can be regarded as measures, technical and non-technical, which can affect the price, the volume of trade goods, or both. Not all of these measure are trade restrictive. SPS and TBT for example can be trade facilitating in the presence of incomplete information which propel consumers to consider a product as safe for consumption (Disdiere al, 2008).

NTMs had received less attention in the past because it was not implicitly seen as a form of trade impediments (trade cost) and was cumbersome to measure and quantify (Austria, 2013; Fugazza & Maur, 2008). However, in recent years, it had come under stronger international scrutiny, which led to the negotiation of the WTO Trade Facilitation Agreement (TFA) in 2013 that entered into force in 2017. TFA contains provisions and measures for expediting the release and clearance of goods, cooperation between customs, and capacity building through technical assistance (WTO, 2017).

More so, TFA is expected to enhance welfare while reducing administrative burdens and transaction costs (WCO, 2014). Trade facilitation (TF) and non-tariff trade barriers (NTBs) are interrelated and it is expected that reduction of NTBs should facilitate trade (Filson & Adekunle, 2014). Plethora of literature has employed partial and computable general equilibrium (CGE) approaches in analyzing NTMs and TF on a regional basis. Over time, literature using gravity models has relied on border, distance and regional trade agreement (RTA) to control and capture all possible trade barriers and facilitation. The border effect thus reflects the impact of NTMs on bilateral trade flow while RTAs capture trade policies. In more recent literature, researchers have introduced other variables to capture specific

[1] In some of the literature, NTMs and NTBs are used interchangeably.

impacts of trade facilitation and NTMs. Some of the variables included port efficiency, regulatory environment, service sector infrastructure, logistic performance, corruption, social infrastructure and customs environment. Using the gravity model and the easily accessible trade data, many authors have estimated AVEs of NTBs when it is difficult to get explicit NTB information (Felipe & Kumar, 2010; Genç & Law, 2014; Weerahewa, 2009)

Several literature has used CGE models to evaluate the economic impacts of NTMs. The CGE model provides a detailed outlook of the economy including the sectoral linkages, factor employment, and national welfare. Since this research is focused on a region, the CGE gives the opportunity to simultaneously analyze the effect of policy shocks on various countries and sectors. The approach employed depends on the nature of policy intended. The export taxes or import tariffs are used when trade barriers generate rent while the efficiency approach is used when NTB increases cost of production (sand in the wheels). Mostly, the efficiency approach captures reduction of NTBs as improvement in technology (Boughanmi et al; 2016; Fugazza & Maur, 2008; Vinokurov et al., 2015)

Regional studies have focused on trade liberalization with respect to tariff and non-tariff barriers reduction, and the formation of PTAs. Anderson (2002) used a CGE model to analyze the implication of agricultural trade liberalization in the IORA countries. Results from the study revealed that agriculture would provide more than one-third of the IORA developing countries' gains if all merchandise trade is liberalized globally. Sub-Sahara African and South-East Asia countries in IORA have found to gain from trade reforms if trade barriers in numerous sensitive products are eliminated. Rahman et al. (2014) assessed the economic impact of the proposed PTAs by IORA using a CGE model. The study simulated that if the high income countries eliminate all tariff while the middle income and the least developed countries (LDCs) cut tariff by 75% and 50% respectively, the welfare and exports of all IORA countries will be increased except for Madagascar. The study concluded that the proposed PTA is likely to have a significant impact on the economy of most countries, with labor-intensive manufacturing sectors benefiting the most.

## III. OBJECTIVES

The overall objective of this research is to analyze the impact NTMs and trade facilitation on the economy of IORA members, giving special consideration to the issue of technical measures (SPS and TBT) and trade facilitation indicators as outlined in the WTO TFA. Specifically the objectives of the project is to:

1. Analyze the IORA trade patterns and assess the prevalence of NTMs in the region using the region NTMs notifications to WTO;
2. Estimate the ad-valorem tariff equivalents (AVE) equivalent of non-tariff measures with a particular focus on sanitary and phyto-sanitary measures and technical barriers to trade;
3. Evaluate the economy-wide and sectoral effects of deepening IORA region through trade policy reforms, including more efficient trade facilitation measures.

## IV. METHODOLOGY

The estimation of the ad-valorem equivalent of non tariff barriers will based on a gravity model, similar to Kee et al. (2005, 2008).
The following equations will be estimated for various agricultural and non agricultural products as aggregated in Global Trade Analysis Project (GTAP).

$$lnz_{ijt} = a_0 + a_1 \ln(GDP_{it}) + \beta_{1i} CNTB_i) + \beta_{2i} \ln(DS_i) + \varepsilon_i \ln(1 + t_i) P_{iw} + \mu_i$$

Where;

Dependent Variable;

$Z_{ijt}$ denotes the value of import volume between countries i and j at time t

Explanatory Variables;

$GDP_{it}$ nominal GDP of country i

$CNTB_i$ dummy variable indicating the presence of a core non-tariff such as technical barriers, import quota system and import license,

$DS_i$ agricultural domestic support

$t_i$ nominal tariff imposed on good i in country

$P_{iw}$ domestic equivalent of world price of good i

The estimated quantity impact of NTBs is transformed into a tariff equivalent based on import demand elasticities $\varepsilon$ ( (Kee et al, ;2005,2009) as stated below

$$AVE = \frac{1}{\varepsilon}\frac{\delta lnZ}{\delta CNTM} = \frac{e^{\beta^{CNTB}} - 1}{\varepsilon}$$

This study will employ PPML estimator as opposed to log-linear model used by Kee et al, (2005). The gravity approach is often considered appropriate than price wedge approach because it makes use of real trade data which are easily accessible at a disaggregated product level than price data (Ghodsi et al.; 2016). The estimated AVEs of NTBs obtained are then imputed as estimates in the GTAP model.

The GTAPv8.1 is used to assess the economy-wide as well as the setoral effects of trade facilitation and NTMs reforms, The GTAPv8.1 is ideal to assess such effects as it considers the sectoral as well as the country linkages through trade and factor mobility. GTAPv8.1 is a standard multi-region multi-sector CGE model with perfect competition and constant returns to scale. The model is fully documented in Hertel and Tsigas (1997). The GTAPv8.1includes 134 regions and 57 commodities/sectors and contains complete bilateral trade, transport and tariff information. For our purpose, the data set was aggregated into 20regions and 20 sectors reflecting the trade structure of the IORA region and was updated by shocking the initial data set to the year 2019 using World Bank data on population, GDP and labor (Boughanmi et al, 2015).

However, as indicated by Dennis (2006), GTPAv8.1 does not include a sector that captures trade facilitation. To capture the latter, we simulate the removal of cross border inefficiencies as an import-augmenting technical change in the GTAP model (Fox et al., 2003). We introduce a technological shock through the AMS variable in GTAP which represents the change in the price of imports from a particular trading partner due to efficiency changes (Fugazza and Maur, 2006) Hertel et al. (1997) argue that improvements in trade facilitation will help reduce the indirect cost associated with transit time (iceberg cost) and reduce the destination price of traded goods.

The data for the gravity modeling will be based on COMTRADE data base and other sources providing the geographical and economic variables affecting bilateral trade. Data related to sectoral and countries aggregation for CGE simulation will be obtained from the GTAP database 2011. NTBs related information will be extracted from United Nations Conference for Trade and Development (UNCTAD) while trade facilitator indicators will be sourced from World Bank Doing Business Database

**V. SIGNIFICANCE**

The study is expected to add to the body of scientific knowledge through empirical analysis of the issues of non-tariff barriers and trade facilitation. The results expected will be potentially used for policy makers to align trade policies with international rules and regulations as reflected in the recently signed WTO trade facilitation agreements. Results will also be also useful to exporting and importing firms in order to negotiate with their respective governments in the IORA region to push for custom reforms and ease trade flows.

## VI. TIMELINE/ DELIVERABLES

| | Year 2020 | | | | | | | | | | | | Year 2021 | | | | | | | | | | | | Year 2022 | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Activities** | J | F | M | A | M | J | J | A | S | O | N | D | J | F | M | A | M | J | J | A | S | O | N | D | J | F | M | A | M | J | J | A | S | O | N | D | **Responsible** |
| 1. Literature review | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | HB+AK+LZ |
| 2. Model setup for gravity modeling | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | HB+LZ |
| 3.Data collection for AVE estimation | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | AA |
| 4. Model estimation and analysis | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | HB+AK+LZ |
| 5. Data aggregation for CGE Modeling | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | HB+AA |
| 4. Data projection scenario set up | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | HB+LZ+HK |
| 5. Simulation, analysis and interpreation | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | HB+LZ+HK |
| 6. Papers writing and publications | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | HB+LZ+HK |
| 7. Final report writing | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | HB |

Note:
HB: Houcine Boughanmi; LZ: Lokman Zaibet; AA: Abdallah Akintola; HK: Hemisiri Kotagama

## VII. REFERENCES


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