شروط كتابة البحث العلمي في مجلة جامعة بنغازي الحديثة للعلوم والدراسات الإنسانية

1- الملخص باللغة العربية وباللغة الانجليزية (150 كلمة).
2- المقدمة، وتشمل التالي:
❖ نبذة عن موضوع الدراسة (مدخل).
❖ مشكلة الدراسة.
❖ أهمية الدراسة.
❖ أهداف الدراسة.
❖ المنهج العلمي المتبع في الدراسة.
3- الخاتمة. (أهم نتائج البحث ـ التوصيات).
4- قائمة المصادر والمراجع.
5- عدد صفحات البحث لا تزيد عن (25) صفحة متضمنة الملاحق وقائمة المصادر والمراجع.

القواعد العامة لقبول النشر

1. تقبل المجلة نشر البحوث باللغتين العربية والانجليزية؛ والتي تتوافر فيها الشروط الآتية:

● أن يكون البحث أصيلاً، وتتوافر فيه شروط البحث العلمي المعتمد على الأصول العلمية والمنهجية المتعارف عليها من حيث الإحاطة والاستقصاء والإضافة المعرفية (النتائج) والمنهجية والتوثيق وسلامة اللغة ودقة التعبير.

● ألا يكون البحث قد سبق نشرة أو قُدم للنشر في أي جهة أخرى أو مستل من رسالة أو اطروحة علمية.

● أن يكون البحث مراعياً لقواعد الضبط ودقة الرسوم والأشكال ـ إن وجدت ـ ومطبوعاً على ملف وورد، حجم الخط (14) وبخط ('Arial 'Body) للغة العربية. وحجم الخط (12) بخط (Times New Roman) للغة الإنجليزية.

● أن تكون الجداول والأشكال مدرجة في أماكنها الصحيحة، وأن تشمل العناوين والبيانات الإيضاحية.

● أن يكون البحث ملتزما بدقة التوثيق حسب دليل جمعية علم النفس الأمريكية (APA) وتثبيت هوامش البحث في نفس الصفحة والمصادر والمراجع في نهاية البحث على النحو الآتي:

● أن تُثبت المراجع بذكر اسم المؤلف، ثم يوضع تاريخ نشرة بين حاصرتين، ويلي ذلك عنوان المصدر، متبوعاً باسم المحقق أو المترجم، ودار النشر، ومكان النشر، ورقم الجزء، ورقم الصفحة.

● عند استخدام الدوريات (المجلات، المؤتمرات العلمية، الندوات) بوصفها مراجع للبحث: يُذكر اسم صاحب المقالة كاملاً، ثم تاريخ النشر بين حاصرتين، ثم عنوان المقالة، ثم ذكر اسم المجلة، ثم رقم المجلد، ثم رقم العدد، ودار النشر، ومكان النشر، ورقم الصفحة.

2. يقدم الباحث ملخص باللغتين العربية والانجليزية في حدود (150 كلمة) بحيث يتضمن مشكلة الدراسة، والهدف الرئيسي للدراسة، ومنهجية الدراسة، ونتائج الدراسة. ووضع الكلمات الرئيسية في نهاية الملخص (خمس كلمات).

3. تحتفظ مجلة جامعة بنغازي الحديثة بحقها في أسلوب إخراج البحث النهائي عند النشر.

إجراءات النشر

ترسل جميع المواد عبر البريد الالكتروني الخاص بالمجلة جامعة بنغازي الحديثة وهو كالتالي:

✓ يرسل البحث الكترونياً (Word + Pdf) إلى عنوان المجلة info.jmbush@bmu.edu.ly او نسخة على CD بحيث يظهر في البحث اسم الباحث ولقبة العلمي، ومكان عمله، ومجاله.

✓ يرفق مع البحث نموذج تقديم ورقة بحثية للنشر (موجود على موقع المجلة) وكذلك ارفاق موجز للسيرة الذاتية للباحث إلكترونياً.

✓ لا يقبل استلام الورقة العلمية الا بشروط وفورمات مجلة جامعة بنغازي الحديثة.

✓ في حالة قبول البحث مبدئياً يتم عرضة على مُحكُمين من ذوي الاختصاص في مجال البحث، ويتم اختيارهم بسرية تامة، ولا يُعرض عليهم اسم الباحث أو بياناته، وذلك لإبداء آرائهم حول مدى أصالة البحث، وقيمته العلمية، ومدى التزام الباحث بالمنهجية المتعارف عليها، ويطلب من المحكم تحديد مدى صلاحية البحث للنشر في المجلة من عدمها.

✓ يُخطر الباحث بقرار صلاحية بحثه للنشر من عدمها خلال شهرين من تاريخ الاستلام للبحث، وبموعد النشر، ورقم العدد الذي سينشر فيه البحث.

✓ في حالة ورود ملاحظات من المحكُمين، تُرسل تلك الملاحظات إلى الباحث لإجراء التعديلات اللازمة بموجبها، على أن تعاد للمجلة خلال مدة أقصاها عشرة أيام.

✓ الأبحاث التي لم تتم الموافقة على نشرها لا تعاد إلى الباحثين.

✓ الأفكار الواردة فيما ينشر من دراسات وبحوث وعروض تعبر عن أراء أصحابها.

✓ لا يجوز نشر إي من المواد المنشورة في المجلة مرة أخرى.

✓ يدفع الراغب في نشر بحثه مبلغ قدره (400 د.ل) دينار ليبي إذا كان الباحث من داخل ليبيا، و ($ 200) دولار أمريكي إذا كان الباحث من خارج ليبيا. علماً بأن حسابنا القابل للتحويل هو: **(بنغازي – ليبيا - مصرف التجارة والتنمية، الفرع الرئيسي - بنغازي، رقم 001-225540-0011. الاسم (صلاح الأمين عبدالله محمد).**

✓ جميع المواد المنشورة في المجلة تخضع لقانون حقوق الملكية الفكرية للمجلة.

info.jmbush@bmu.edu.ly

00218913262838

د. صلاح الأمين عبدالله
رئيس تحرير مجلة جامعة بنغازي الحديثة
Dr.salahshalufi@bmu.edu.ly

AGRICULTURE AND INDUSTRY SECTORS LINKAGE IN LIBYA

Dr. Fouzi Salih Faraj

(Agricultural Economics Dept., Faculty of Agriculture, University of Benghazi, Libya)

Abstract:

The agricultural sector plays an important role in Libyan economy, due to its contribution to achieving food security and providing income, as well as employment opportunities for a large proportion of the populations, as well as providing raw materials for many manufacturing industries whereas, many countries relied in their initial stages of agricultural surplus production growth to finance the development of the industrial sector. Industry also provides many manufactured goods that are required for agricultural production, and at the same time it uses agricultural crops as raw materials, the development of industry led to strengthen the links between each other, as this benefit for both sectors together and national economy as a whole. This study came to test the causal relationship between the agricultural and industry sector to understand the linkage between two sectors, using Vecm. The results of the study showed that there are a long and short run casual running between each other. These results confirm the effective contribution of agriculture and industry reliance on their production inputs to develop each other.

Keywords: Cointegration; VECM; Granger causality; Agricultural and industry sectors linkage

الملخص:

يلعب القطاع الزراعي دورا مهما في الاقتصاد الليبي، نظرا لمساهمته في تحقيق الأمن الغذائي وتوفير الدخل، فضلاً عن توفير فرص العمل لنسبة كبيرة من السكان. وكذلك توفير المواد الخام للعديد من الصناعات التحويلية. حيث اعتمدت العديد من الدول المتقدمة في مراحل نموها الأولى على فائض الإنتاج الزراعي لتمويل تنمية القطاع الصناعي. كما ان الصناعة توفر أيضا العديد من السلع المصنعة المطلوبة للإنتاج الزراعي، وفي نفس الوقت تستخدم المحاصيل الزراعية كمواد خام تؤدي إلى تطور الزراعة، وبالتالي فان تقوية الروابط بين القطاعين يعود بالفائدة على القطاعين معا والاقتصاد الوطني ككل. على الرغم من إن قطاعي الزراعة والصناعة في ليبيا استثمارا مخصصات مالية ضخمة، ألا ان مساهمتها في الناتج المحلي الإجمالي ضلت ضئيلة، كما هناك عجز في مجابهة الطلب المتزايد على السلع الزراعية والصناعية، كما أن هناك ضعف في تشكيل قاعدة تكاملية أو ترابط بين القطاعين لتوفير مستلزمات الإنتاج لكل منهما للأخر ويؤدي بتعجيل النمو في القطاعين والاستغناء عن الاستيراد لتزود بهذه الاحتياجات. لذلك جاءت هذه الدراسة لاختبار العلاقة السببية بين القطاعين الزراعي والصناعي لفهم الترابط بينهما باستخدام نموذج تصحيح الخطأ الموجه (VECM). وأظهرت النتائج ان هناك علاقة سببية طويل وقصيرة الأجل بين القطاعين، وقد أكدت هذه النتائج المساهمة الرئيسية والفعالة للقطاعين في اعتمادهم على مدخلاتهم الإنتاجية لتطوير بعضهم البعض.

الكلمات المفتاحية: ترابط قطاعي الزراعة والصناعة، سببية جرانجر، نموذج تصحيح الخطأ الموجه التكامل المشترك.

- **Introduction:**

Agricultural is playing an important role in contributing to socio-economic development in many countries (Subramaniam & Reed, 2009). Also, it is the key of the development that led to the rise of civilization with husbandry of domesticated animals and plant creating food surplus that enabled the development of more densely populated and stratified societies (Bajpai, 2010). Moreover, it contribution to the national economy, provides employment for numbers of people, and contributes in more than one ways in industrial development (Jha, 2009).

In another hand, industrialization and economic development always go hand in hand to providing employment, raising paying capacity of national productivity and income. Besides that, it provides a viable solution to the ever- increasing economic problem of the countries faced with population exploitation of a country natural resources to the best advantage (Sharma, 2006).

Agricultural development implies not only farm productivity but also activities relating to industry because the interlinkage between agriculture and industry sector existence where the industry provides material inputs to agriculture sector (Chaudhuri, 2004).

- **Research problem:**

The agricultural and industrial sectors are among the most important productive sectors relied on in economic development events that work to rid the economy of the oil sector dominance on the national income and achieve self-sufficiency in the production of good Despite the agriculture and industrial sectors received huge financial allocations, their contribution to the GDP is insignificant and there is a deficit in a confrontation the increasing demand for agricultural and industrial commodities. Also, their effectiveness is weak in forming an integrated base to provide complete requirements of them represented in the inability of the agricultural sector to provide raw materials for the industrial sector. What's more, the inability of the industrial sector to provide agricultural production process requirements as pesticides, fertilizers, machinery and agricultural equipment, which works to accelerate growth in the two sectors and dispense with import to provide for these needs. Therefore, the research problem can be summarized in the answer to the following main question and its sub-questions: Is there a causal relationship between both sectors in Libya? And if there is a relationship between them, is it a short –term or long-term relationship, or both? Is this causal relationship unidirectional or bi-directional?

- **The Research Importance:**

The importance of this research comes as there is a paucity of studies dealing with the relationship between the agricultural and industrial sectors in the long and short-term in Libya, where this research came to study the interlinkage relationship between the two sectors in Libya in the short and long-term by using the vector error correction model to see if there is a relationship between them? Whoever causes the other and thus these efforts helps in achieving economic and social development through these types of studies to be more useful to decision-makers later.

- **Research objectives:**
- **General Objective:**

The research aims to identify the linkage among the agricultural and industry sector in Libya.

  - **Specific Objectives:**

The following three tasks are to be accomplished to achieve the general objective of the research:

  1- To identify the existence of cointegration relationships among Libyan gross domestic product, agricultural, and industry sector.
  2- To investigate the short and long-run causal relationship among the agricultural and industry sector to understand the linkages between two sectors.

- **Data and Methodology:**
- **Source of data and period of the study:**

The study employed secondary data during the period of 1970 to 2018 to assessment the causal linkages between the agricultural and Industry sector. This data is extracted from various secondary sources including statistical reports from various Libyan institutions; the Libyan Central Bank and the Ministry of Planning in Libya, in addition to the reports of the Arab monetary Fund.

- **Methodology:**
- **Model Specification:**

$INGDP_t = f(AGDP_t)$

$AGDP_t = f(INGDP_t)$

Thus, the model of the causal relation between the agricultural and industrial sector is as follows:

$$AGDP_t = \alpha_1 + \sum_{i=1}^{k} \beta_i \, INGDP_{t-i} + \sum_{i=1}^{k} \gamma_j \, AGDP_{t-j} + e_{1t} \qquad (1)$$

$$INGDP_t = \alpha_2 + \sum_{i=1}^{k} \theta_i \, INGDP_{t-i} + \sum_{i=1}^{k} \delta_j \, AGDP_{t-j} + e_{2t} \qquad (2)$$

Where,

AGDP is Agricultural Gross Domestic Product

INGDP is Industrial Gross Domestic Product

- **Previous empirical studies:**

Many empirical studies have investigated the interlinkage between agriculture and industry sector. Uddin (2015) examined the effect of agriculture and industry on economic growth through the use of series time data during period 1980-2013 from Bangladesh. Their findings revealed that there is bi-directional causality between industry and agriculture. In another study, Yetiz and Ozden (2017) employed data

over the period 1968-2015 from, Turkey in order to study causal relationship among GDP, Agriculture, industry and the service sectors on economic growth. He found that unidirectional granger causality from agriculture to industry. Similarly, Degu (2019) employed time series data during the period for examine the causal linkage between agriculture, industry and service in Ethiopian by granger causality test. His findings indicated that there is long run causality running from agriculture to industry and bi-directional causality between industry and agriculture.

Kaur et al (2009) did another study in India cointegration analyses inter-sectorial linkage. They found sectors display strong long-run equilibrium relationship amongst each other. Asim & Akbar (2019) studied the impact of sectional growth linkages on agricultural output of Pakistan. The study used a Vector Error Correction Model over the period 1960 - 2016. Their Vecm results demonstrated that the industry sector has a negative impact on the performance of output. Furthermore, Matahir (2012) employed the data from 1970 to 2009 in Malaysia to investigate the nexus relationship among agriculture and industrial. The study finds that there is causal relation running from industrial to agricultural in long and short-run.

In same vein, Bashir et al, (2019) sought to examine the causal relationship between agricultural industry, and economic growth in Indonesia. The study utilized Vecm for this proposes. Based on their findings, directionally causality exists in short-run and running from agriculture to industry. Waniko (2016) in his study aimed to assess the linage effect on development agenda in Nigeria. To conduct their study, they used data from 1981 to 2012. The results showed that. a causal link in the long run between the agricultural sector and industrial sector has been found.

- **Result and Discussion:**
- **Unit Roots Test**:

The first step is to check the series stationary. The augmented Dickey Fuller and Phillips-Perron approach were adopted and the results of the tests as presented in table 1and 2. The results show that all the series are non-stationary at levels and stationary at first differences. Since the series became stationary after one differencing, the series is said to be integrated at the order one I (1).

Table 1: Augmented Dickey-Fuller (ADF) Test

Variable	ADF test (levels)	ADF test(first differences)
In(AG)	-2.62	-7.43*
In(IN)	-2.52	-11.15*

- Stationary at 0.01 % critical levels

Table 2: Phillips-Perron Test (PP) Test

Variable	ADF test (levels)	ADF test(first differences)
In(AG)	-2.78	-7.42*
In(IN)	-2.53	-11.71*

- Stationary at 0.01 % critical levels

- **Lag Selection:**

The appropriate lag selection can be obtained by using these tests like Akaike Information Criterion (AIC), Schwarz Information Criterion (SC) etc. To use the lag in the Johansen co-integration test and the Vector Error Correction Model we depend on the lag selection criteria on AIC and SC that indicating that optimum lags are 2, hence the optimum lag will be 2.

Table 3: Lag Selection Criteria

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-102.3022	Na	0.353424	4.635653	4.715950	4.665587
1	-23.70855	146.7081	0.012843	1.320380	1.561269	1.410181
2	-13.80254	17.6107*	0.00989*	**1.05789***	**1.45937***	1.20755*
3	-11.46344	3.950473	0.010685	1.131709	1.693781	1.341244
4	-8.789762	4.277889	0.011400	1.190656	1.913321	1.460058

* indicates lag order selected by the criterion

LR: sequential modified LR test statistic (each test at 5% level)

FPE: Final prediction error

AIC: Akaike information criterion

SC: Schwarz information criterion

HQ: Hannan-Quinn information criterion

- **Cointegration Test:**

Track and Maximum eigenvalue statistics employed to investigate the existence of a long run among study variables. This suggests that there exist a maximum of one vector. The results are shown in table 4. It is revealed that the statistics value of Track and Maximum eigenvalue statistics are greater than the critical value (None), which established a long-run cointegration relationship in the model.

Table 4: Johansen Cointegration Test

Hypothesized no .of CE(s)	Trace Statistic	5% critical Value	Max-Eigen Statistic	5% Critical Value
Non*	26.56775	15.49471	22.93095	14.26460
At most 1	3.636796	3.841466	3.636796	3.841466

Trace and Max-Eigen value test indicate 1 cointegration eqn (s) at the 0.05 level.

- **Long Run Causality:**

The linkages between the agricultural sector and industry were examined using the vector error correction mechanism. The results of the long run causality test in table 5

shows there is Bi-directional causality from agriculture to industry sector at 1 and 10 percent level respectively. This implies that agricultural and industrial sector have significant backward linkages with each other and they have contribution to Libyan development..

D(INGDP) = C(1)*(I(-1) - 0.480007260256*AGDP(-1) - 3.33140118029) + C(2)*D(INGDP(-1)) + C(3)*D(INGDP(-2)) + C(4)*D(AGDP(-1)) + C(5)*D(AGDP(-2)) + C(6)

D(AGDP) = C(7)*(INGDP(-1) - 0.480007260256*AGDP(-1) - 3.33140118029) + C(8)*D(INGDP(-1)) + C(9)*D(INGDP(-2)) + C(10)*D(AGDP(-1)) + C(11)*D(AGDP(-2)) + C(12).

Table 5: Long run causality test based on Vector Error correction model

Error Correction Term	Coefficient	t-Statistic	Prob
C(1)	-0.374565	-4.193265	0.0001
C(7)	-0.098123	-1.840904	0.0693

- **Short Run Causality:**

Table 6 shows that Granger causality test results based on Vecm in short-run. The Granger causality test is used to examine the presence and direction of causality between dependent variables and the explanatory variables. The results indicate there are short-run causal impact form agriculture to industry sector or vice versa.

Table 6: VEC Granger causality/ Block Exogeneity Wald Tests (short run)

Dependent variable: D(INGDP)			
Excluded	Chi-sq	df	Prob
D(AGDP)	8.356986	2	0.0153
Dependent variable: D(AGDP)			
Excluded	Chi-sq	df	Prob
D(INGDP)	8.391836	2	0.0151

- **Summary:**

The agricultural sector plays an important role in the Libyan economy, due to its contribution to achieving food security and providing income, as well as providing job opportunities for a large proportion of the population. As well as providing raw materials for many manufacturing industries. As many developed countries relied in their early stages of growth on surplus agricultural production to finance the development of the industrial sector. Industry also provides many of the manufactured goods required for agricultural production, and at the same time, agricultural crops are

used as raw materials that lead to the development of agriculture, and thus strengthening the links between the two sectors benefits both sectors together and the national economy as a whole.

Although the agricultural and industrial sectors in Libya invested huge financial allocations, their contribution to the gross domestic product was insignificant, and there is a deficit in meeting the increasing demand for agricultural and industrial commodities, and there is a weakness in forming an integrative base or interconnection between the two sectors to provide Production requirements for each of them to the other and lead to acceleration of growth in the two sectors and dispensing with import to provide for these needs. Therefore, this study came to test the causal relationship between the agricultural and industrial sectors to understand the links between them using the Directed Error Correction Model (VECM). The empirical results from the analysis confirm that the long rand short run causality test shows there is Bi-directional causality. In another hand, they revealed there existence of inter-sectoral linkages among agricultural and industrial sector and reliance on their production inputs to develop each other.

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