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Editorial

Journal of Social and Development Sciences (JSDS) is a scholarly journal deals with the disciplines of social and development sciences. JSDS publishes research work that meaningfully contributes towards theoretical bases of contemporary developments in society, business and related disciplines. The work submitted for publication consideration in JSDS should address empirical and theoretical contributions in the subjects related to scope of the journal in particular and allied theories and practices in general. Scope of JSDS includes: sociology, psychology, anthropology, economics, political science, international relations, linguistics, history, public relations, hospitality & tourism and project management. Author(s) should declare that work submitted to the journal is original, not under consideration for publication by another journal, and that all listed authors approve its submission to JSDS. It is JSDS policy to welcome submissions for consideration, which are original, and not under consideration for publication by another journal at the same time. Author (s) can submit: Research Paper, Conceptual Paper, Case Studies and Book Review. The current issue of JSDS consists of papers of scholars from South Africa, Burkina Faso, USA, Namibia, Nigeria, Bangladesh and Australia. Public sector procurement practice, technical efficiency analysis of millet production, 2020 stimulus coronavirus aid, relief and economic security act, determinants of rural household food consumption expenditure and the multiple meanings of jatio sangsad bhaban are some of the major practices and concepts examined in these studies. Journal received research submission related to all aspects of major themes and tracks. All the submitted papers were first assessed, by the editorial team for relevance and originality of the work and blindly peer-reviewed by the external reviewers depending on the subject matter of the paper. After the rigorous peer-review process, the submitted papers were selected based on originality, significance, and clarity of the purpose. Current issue will therefore be a unique offer, where scholars will be able to appreciate the latest results in their field of expertise, and to acquire additional knowledge in other relevant fields.

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PAPERS

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Public Sector Procurement Practice: A Leadership Brainteaser in South Africa

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Abstract: In the application of the procurement practices, public's confidence can be impacted by unethical public procurement practice as is predominant at the initial phase of tender planning procedure. Prices can be overestimated and outcome is that a missed prospect vis-à-vis finance for mega infrastructure projects. There are convolutions, proportions and an extraordinary bulk of financial stream as handy transactional dealings interacts in the market for goods and services. Certainly, procurement is mostly susceptible to unscrupulous procurement and nonconformity with relevant legislations. Such destructive practices prohibit government from procuring at cheaper prices. The paper will bridge ranks into the academic environment discourses with regards to accountability, institutional leadership capacity, transparency, stewardship, compliance and enforcement of legislation, good governance and corruption in research. The study seeks to scrutinise methods which gave rise to leadership brainteaser. A descriptive and content analysis qualitative research method will guide the study.

Keywords: *Procurement practices, corruption, leadership, public sector.*

1. Introduction

Public procurement is an intricate utility, with multidimensional procedural action relating to unrestricted policy. Public procurement starts momentous modus operandi in government and it thus stands as the bureaucratic mandatory for distribution of government amenities. Procurement can be seen as a technique structured method used to streamline and institution procurement process and achieve desired results while tradable budgets outlays, decreasing time period, building time in supplier relationships. Procurement can be unswerving, unintended, responsive or hands-on. For the purposes of this paper it is imperative to bring into context issues of best and the negative practices in government, of which the outcome or product is value for money or waste of public funds. The Auditor General of South Africa has identified sixteen national and provincial government institutions for material implementation. The outcome regarding the manoeuvre was that 28 material irregularities amounting to R2.81 billion financial losses was widespread (South Africa, Republic, 2018-19).

An amount of R2.51 billion was known, while R0.3 billion estimated amount was not known. The nature of material irregularities were poised in the unfair or uncompetitive procurement processes, overpricing of goods and services procured, supplier appointed that did not deliver goods and or payment of goods or services not received. Indeed, the report paints a gruelling picture in the history of public administration in South Africa. There is, without doubt, a shortfall of academic research to government procurement practices and the continuum of unethical procurement practices in South Africa. The public procurement misgivings warrant a research in order to augment the studies available in the public domain. However, acknowledgment to acclaimed few scholars such as Taylor & Raga (2010), Mazibuko and Fourie (2017) and many others who deemed it fit to research on the subject, practice and concomitant riddle. The Constitution and relevant legislations are noteworthy in regulating government procurement in South Africa as they relate to procedures. The fact that government is the market regulator and partaker of legal and regulatory framework prognosis, can be regarded an orthodox.

Public Procurement Reform: Procurement is moving from transactional oversight to strategic participation within institutions with deep infiltration of technology in the front and back offices and house administration procedures. Like any government internationally, South Africa has undertaken several procurement transformation since1994, to modernise management practices, create a user friendly environment. The procurement procedure should be profound to meeting the wants of the society (Ambe & Badenhorst-Weiss, 2012). In discussing public-sector it is incumbent to note that the public-sector institutions i.e. government departments, constitutional institutions, municipalities and entities (South Africa, Republic, 2003b; Auditors/Global, Institute of International Auditors (IIA), 2013; South Africa, Republic, 2015c; 2016).

Corruption Perceptions Index: South Africa: Corruption perception index assist to gauge how countries are with regards to corruption. With a 2019 ranking of 70 out of 180 countries and a score of 44 out of 100 (TI, 2019), compared to the 2018 ranking of 73 out of 180 (TI, 2018) and score of 43 out of 100 (TI, 2018), South Africa has improved only marginally in terms of score and ranking, which is the real indicator of perceptions about corruption in the country. South Africa is still among those countries deemed to have serious corruption problems (TI, 2018; 2019). South Africa has steadily been performing worse from year to year (2018 and 2019). This is in terms of the Corruption Perceptions Index (CPI), which ranks countries/territories based on how corrupt a country's public sector perceived to be. This state of affairs could prove damaging to the country's reputation (Institute of Risk Management of South Africa (IRMSA), 2015).

Legislative Framework: The procurement procedure underpinned by procurement legislation (South Africa, Republic, 2000) is important in the procurement environment. Such a legislative regimen was established by parliament to reflect the constitutional status in terms of section 217. The government is continuing with reforms creativities in the procurement environment. The legislation applies to institutions (department, constitutional institution, a municipality or a municipal entity, public) in South Africa. The leadership should heed the fact that an institution must conduct procurement accompanied by properly planned procedures. In the legislation, the procurement contracts perse should promote categories of persons or businesses or a sector; goods that are manufactured in the country. In addition the procurement legislation is there to promote local technology and its commercialisation and the creation of jobs or intensification of labour absorption. Enterprises based in townships, rural or underdeveloped areas, province or municipality providing goods, services or infrastructure are promoted in the legislation.

The leadership should also take into account measures regarding the involvement of a manufacturer of goods in bidding processes. Such manufactures should be those aimed at advancing industrial development and at advancing small medium and micro enterprises in high value procurement (South Africa, Republic, 2000c; 2003a; Dlamini & Ambe, 2012; South Africa, Republic, 2020b). Treasury norms and standards have been entrenched in the legislation to ensure supplies of works (South Africa, Republic, 2003c; Arrowsmith & Quinot, 2013). Further, there are also international regulations that guide public procurement supplies. Those regulations are the Model Law (1994 UNCITRAL Model law) (World Trade Organisation, 1994; World Trade Organisation, 2011a; South Africa, Republic, 2000a; 2004). The legislations and regulations (Quinot, 2014; South Africa, Republic, 2015c; Fourie, 2015) are intended to be fit for purpose in the application of procurement procedures. Despite the stipulation in the Constitution, the public sector leadership is still poked with unethical procurement practices and visionary leadership deficiency.

2. Literature Review

Conceptualisation of Procurement Practice: The bidding procedure in heralded by on getting through valuation of requirements and specification regarding the feasibility of available market demand for goods, services and works. The draft Public Procurement Bill (2020b) was designed with specific, objects in mind such as to ensure that the government institutions utilise and leverages procurement for the advancement of. In addition the instrument should stimulate an investment in the country. Leadership should acknowledge that the novel legislation is an attempt to improve the procurement procedures in government. Such transformation and reforms will give the office of the chief procurement officer certain powers and functions such as administering national legislation, ensure policies and legislations implementation and sanction compliance with national supply chain management and procurement policies, regulations, instructions and guidelines.

A bid can be rejected in case the bid is non-responsive and evidence of collusion is reported. Leadership should there exercise due consideration and provide effective and efficient leadership. Notwithstanding these rationalisation and transformation leadership has to put more effort to effectiveness in procurement procedure and rid out unethical conducts and scourge of corruption in public procurement. A provincial treasury may consult with the national treasury and facilitate the procurement of transversal term contract for goods, services or infrastructure. The relevant treasury must ensure that the institution affected by term contract appoint representatives with the mandatory proficiency to serve on the important procurement

committee. Leadership should ensure that after goods, services or infrastructure have been procured through a transversal tenure contract, an institution must ensure that, where appropriate, a service level agreement is entered into between the supplier and the institution before any goods or services could be ordered in relations to the contract.

Procurement Procedures: Procurement procedures relate to the provision of guidance to institutions and public officials responsible for public procurement, financial management, suppliers, auditors and other persons involved in procurement. The procurement procedure is catalysed by the Constitution and relevant legislation in government. The open procedure is a single stage process whereby a contracting authority advertises the contract opportunity and then issues tender documents tender documents, including the specification and contract, to all economic operators that request to participate. The restricted procedure is a two stage process, whereby the contracting authority advertises the contract opportunity and then the economic operators submit requests to participate and then provide selection stage or pre-qualification information, which is used to perform the contract and to select the economic operators that are to be invited to tender. The contracting authority limits the number of economic operators that it invites to tender and draw up a shortlist of suppliers. A competitive dialogue procedure uses a two stage process whereby the contracting authority advertises the contract opportunity, and after submitting requests to participate the economic operators first submit pre-qualification selection stage information.

Which is used by the contracting authority to establish whether the economic operators that are qualified to perform the contract and to select the economic operators that are to be invited to tender? The last procedure is a negotiated procedure with prior publication of notice is a two stage process. In procedure, the contracting authority advertises the contract opportunity, and the economic operator s first submit pre-qualification and selection stage information, which is used by the contracting authority to establish whether the economic operators are qualified to perform the contract and to select the economic operators that are to be invited to tender. The contract authority can limit the number of economic operators to be invited to tender (Sigma, 2011; South Africa, Republic; 2012; 2015; 2015c). World best practice bench marks were needed at all times. (South Africa, Republic, 2017b). Government leadership should view public infrastructure as economic and strategic imperative in nature. Public infrastructure, particularly that relating to roads, energy, water and transport, enables the economy to grow faster and become more productive through contributing to raising competitiveness, exports and lowering the cost of doing business (South Africa, Republic, 2018). Infrastructure creates jobs for low-skilled people and promotes spatial inclusivity.

Investment in infrastructure also provides opportunities for broad based black economic empowerment (B-BBEE). If infrastructure is not planned and delivered efficiently and effectively, it can retard rather than accelerate the achievement of the socio-economic and growth objectives. As a public sector manager and leadership, one would not be happy when budgets are partly spent at the end of the financial year. Under spending occurred, on average, over the 2015/16, 2016/17 and 2017/18 financial years whereby state-owned enterprises and public entities have spent not more than 75 percent and 65 percent of their respective budgeted amounts. It is demoralizing to note that, the state as a whole did not have capacity to spend more than 85 percent of the available budget. The under-spending over this period increased during a time when National Treasury Supply Chain Management (SCM) instructions became applicable to major public entities, national and provincial business enterprises. In the 2017/18 financial year, metropolitan councils had difficulties spending their capital budgets. None of the metropolitan councils spent more than 80 percent of their capital budgets. Their spending ranged between 55 to 78 percent. This was a decline from the performance of the 2016/17 financial year. In the 2017 /18 financial year the spending was recorded as follows.

30 (or 12 percent) of the municipalities spent less than 40 percent of their capital budgets; while 51 spent between 40 percent and 60 percent respectively. On one hand 94 councils spent between 60 percent and 80 percent respectively. While 53 councils spent between 80 percent of their capital budgets (South Africa, Republic, 2019b). In addition, 24 municipalities overspent their capital budgets between 100 percent and 150 percent, while 5 overspent by more than 200 percent (South Africa, Republic, 2020a). The state of affairs should be fear-provoking to the local government leadership and governance as a whole. The Construction Industry Development Board (CIDB) in the Construction Monitor-Supply and Demand (South Africa, Republic,

2019a) posits another picture for local government. The publication perse argues that at the end of the 2017/18 municipal financial year, the total under spending of municipalities decreased from around R15 billion for the 2016/17 financial year to around R13 billion with metropolitan councils contributing around R11 billion to under spending. In the 2017/18 financial year, metropolitan councils had difficulties spending their capital budgets. The CIDB monitor also pointed out that in the 2017 /18 financial year 226 (or 88 percent) of municipalities spent less than 100 percent of their capital budgets, a figure which is approximately the same as in the 2016/17 financial year.

Certainly, leadership should view this as an overwhelming and gruelling state of affairs in the current local governance. Public procurement practices riddle public sector leadership. For example, the trends in high profile public sector mega projects such as the Gauteng Improvement Project, the Gautrain Rapid Rail Link System, the Ingula Pumped Storage Scheme, the King Shaka International Airport, the New Multi-Product Pipeline and the Kusile and Medupi coal power plants revealed an order of magnitude increase from the initial estimated projects cost to the final costs with a concomitant increase in schedule for completion. The time and cost-over-runs on the Kusile and Medupi coal power plants provide an indication of the degree to which mismanaged mega projects can damage the economy. Certainly, the leadership in the public sector spends sleepless nights, arduous and are riddled by the procurement practices.

Bidding Processes: Procurement phase encompass the necessity documentation, obtaining of goods preparation, request dispensation, and determination of procurement method, planning and publication for offer to tender, bid proposal meeting and site visits. The cycle does not end there; there are also milestones such as submissions and opening, bid offer valuation, award approvals, deal intercession, contract award and management. All these ingredients have to go into the basket of what the procuring institutions have to follow succinctly and comply with polices and legislations. The leadership in the procurement environment should make sure that an institution must prepare an invitation to bid, inviting bidders to submit bids for the provision of goods or services. Such arrangement must exclude consultancy services or infrastructure. Appropriate standards and bid documents must contain clear instructions, description of the object of procurement, methodology, criteria and proposed form and conditions of contract. The bidding process comprise elements such as invitation to bid, bid documents, qualification criteria for bidders, submission of bids, bid security deadline for the submission of bids and withdrawal modification of bids. In addition , the process have bid validity period, opening of bids, examination and evaluation of bids, rejection of bid or proposal, re-advertising of bid, verification of bidders or suppliers and award of procurement contracts (South Africa, Republic, 2020b).

The planning stage is paramount within the bidding processes. The South African pre-bidding stage relates to valuation of requirements and budgets, bid specifications, compilation of bid documents and public notice, and supplier database registration (UNODC, 2013). The planning focuses on demand, item and specification management, and supplier management as key phases in the loop (South Africa, Republic, and 2015c). The requirements of the institution's (South Africa, Republic, 2003b; 2012) market research for planning is central in orchestrating the value for money principles (South Africa, Republic, 2004; Van Weele, 2010; Crandall, Crandall and Chen, 2015; South Africa, Republic, 2015c). A single tender portal and central data base is used in South Africa. Procuring authorities use e procurement when procuring goods, services and works (Davey & Gatenby, 2016; UNOPS, 2011; South Africa, Republic, 2004). Advertisement of tenders should be done through the Central Supplier Data Base (CSD) and comply with the (South Africa, Republic, 2016). It is worth mentioning that it is compulsory to procure goods and services through the CSD. e. Procurement which is the use of information and communication technology can increase transparency and facilitate access to public tenders (OECD, 2016). Evaluation and awarding of bid is fundamental for the leadership to be vigilant about as anything is erroneous can amount to prejudiced practice.

Leadership should ensure that information is requested from the bidders for clarification. The evaluation of tenders is underpinned by value add and procedural affair for the different range of procurement processes (South Africa, Republic, 2012). The procurement leadership should note that the procedure allows procuring authorities to cultivate conditions with regards to good, services, and public works. Valuation requirements should precede the implementation of procurement through effective and efficient procurement procedure. The basis for bid evaluation and selection are delineated in the directives to dealers and/or in the conditions

of contract (South Africa, Republic, 2004; 2015b). With regards to the enforcement of administrative action, leadership should be cautious when dealing with contracts during the award stage to avoid astonishing circumstances. All bid documentation must include the evaluation and adjudication criteria. Tenders may be evaluated only on the basis of the pre-disclosed requirements and criteria (Bolton, 2006; Ambe & Badenhorst-Weiss, 2012; UNODC, 2013; South Africa, Republic, 2015c; 2016; 2017a). A bid can be rejected in case the bid is non-responsive and evidence of collusion is assumed. Leadership should be upfront in terms of taking decisive decisions by cancelling procurement in the event that significant change in technical specification, no responsive bids received, insufficient bids received, irregularity in the process and evidence of corruption (Majila, Taylor & Raga, 2014)) is widespread.

In addition, procurement can be cancelled owing to the consideration in the interest of national security (South Africa, Republic, 2017b; 2020b). Skirmish interest should be addressed in the procurement environment. If an official or close relative, associate of an official, has, or intend to acquire, a direct or indirect personal interest a matter requiring the institution's decision, that official must disclose such interest immediately after receiving the agenda of the meeting of the procurement structure of that institution. The staff of an institution may not participate in the considerations process (South Africa, Republic, 2003a; 2015c; Davey & Gatenby, 2016). The leadership must be mindful of the persons who are prohibited from partaking in the offering processes. A bidder subject to a barring order, a minister of government department or municipal councillor, an employee of any government institution by advantage of their involvement in an unit providing or executing goods services, must be debarred from partaking in procurement process. Contract performance management give a response whether projects are effectively and efficiently performing or not. Contract lifespan controlling relates to methodical and well-organized management as a post tender process addresses performance thereof. (UNODC, 2013; South Africa, Republic, 2012; 2015; 2015c).The leadership should be wiry on the application of procedure that seek ethical procurement practices by suppliers (South Africa, Republic, 2000b; South Africa, Republic, 2017b; Raga, Bayat & Ferrera, 2012).

3. Methodology

The qualitative research method was used applied for this research. Data so collected was available from previous reports on public procurement, procedure manuals, and annual reports. In addition such instruments were sourced from National Planning Commission. A wide range of publications and journal articles, and web-based Internet were also collected.

4. Results and Discussion

The legislative instruments, institutional parameters, procedures, are the pillars practice whether private sectors. The South African public sector uses bidding processes namely; planning stage, evaluation and awarding of bids. The outlooks of the processes are similar to the ones applied internationally. However, there are some gaps as can be discernable from the discussion which warrant a drastic model to turn around conundrums. Despite all legislative and other institutional arrangements, the public sector procurement practices still face the leadership mystery and teasing. To this end, falling public sector budgets and increasing under-spending over time are pervasive in the procurement environments. At the same time, the effectiveness of interventions to improve government's inability and incapacity to spend its infrastructure budget remains questionable and ruptured.

Institutional Arrangements: The institutions must conduct procurement, plan, and document requirements, obtain authorisation, define procurement requirements, identify appropriate standards bids documents, provide procurement information, and communicate with all bidders. Leadership has massive role to play in ensuring the integrity of national, provincial, municipalities and entities. Institutions must conduct procurement in accordance to proper planning and document requirement authorisation, procurement needs, standard bid document, methodology and criteria to evaluate bids and communicate such to bidders in a confidential manner. Procuring institutions have and thus take such matters regarding, specification set criteria perse. Government continues to rationalise and transform procurement legislations. Provincial treasuries must exercise control over the implementation and enforce transparency and effective management of procurement function. Leadership must ensure that the issues of integrity, development of

measures, and review of institutional decisions, monitoring and guidance on procurement system, database creation and use of technology renowned (South Africa, Republic, 2020b). A degree of integrity is needed from the procurement official point of view.

Delivery Management: South Africa's public infrastructure investments over the past two decades amount to R3 trillion. Despite this massive budget, the speed, quality and efficiency of many of these projects have not matched the level of investment. Project planning at all levels, including for long-term maintenance is proved to inadequate (South Africa, Republic, 2019c). The major contributor to disappointing procurement environments resides in the absences of delivery management and the critical leadership role played by a knowledgeable servants in terms of planning, specifying, procuring and delivering infrastructure projects efficiently and effectively, resulting in value for money. Certainly, poor planning in terms of other aspects in the chain may results in defects in the identification, assessment and preparation of the project.
Surely, procurement officials must amongst others, perform duties fit for purpose, constituent to situations. Above all, poor structuring and workmanship, unfulfilled management of the tender process, none-responsiveness in contract management and sloppy draft contracts can be enormousness. Surely, leadership in government and particular procurement environments must be vexed about the trend with regards to delays in infrastructure development. The issue is aggravated by deficiency in management capacity and proper skills. An innumerable of uprightness hazards is rampant in any unrestricted procurement cycle as risk occurs at every step of the method (OECD, 2016). Irregularities in the procurement processes and inadequate contract management took place on school, housing and water infrastructure projects. Projects displayed weaknesses with regards to delayed delivery, poor quality work, waste and mismanagement. Certainly, the delays were due to inadequate planning and project management processes, prolonged procurement processes and poor contractor performance.

For example**,** unfair or uncompetitive procurement processes resulting in overpricing of goods and services were committed by 11 or 39 percent of departments with a value of R438 million and that resulted in irregular procurement. In some instances suppliers did not deliver goods after appointment and it occurred to 1 or 4 percent of departments and the value was R2 200 million. Payment of goods or services not delivered occurred in 11 or 39 percent of departments and the amount to that effect equals to R55 million. Poor workmanship also resulted in payment for poor quality experienced at 2 or 7 percent of departments with a value of R7, 6 million. Invoices or claims were not paid on time whereby 3 or 11 percent of departments were culprits to the value of R106 million was delayed. To this end, overall internal control slightly regressed (South Africa, republic, 2018-19). Accountability for government spending, impact of poor financial and performance management such as the delivery of key government programmes is paramount. To this end, the widespread deficiency of consequences made the situation even worse.

Remedies and Enforcement: Procuring authorities should have in the procedure remedy of damages for aggrieved parties as an instrument to resolve dispute. The tool should be used in the interest of parties, i.e. the authority and supplier. The instrument would be used to attempt to resolve the conflict before taking it to courts. To this end, there are no specific review authorities that review claims regarding non-compliance save with the stipulation of the regulator in the envisaged Procurement legislation (2020b). However, National Treasury, Auditor General, Special Investigating Unit, Public Protector and to some extent the Human Rights Commission can investigate claims and assist claimants to resolve such conflicts. Arguably, the contracts awarded in terms of procurement legislation do amount to administrative action. To this end, the PAJA has wide-ranging vertical procedures and effectively allows any person to instituted proceedings before the high courts for the review regarding such administrative actions. It is generally incumbent upon the leadership and in particular within the procurement environment to ensure that the prescript of the Constitution, procurement legislation, relevant guides and regulations are practiced wholly. Leadership should vigorously; snoop that regulations are applicable to all contracts implemented by institutions relating to acquisition, disposal of assets and letting and hiring of assets inclusive of public private partnerships.

Capacity Building: The government budgets huge amount of money for capacity building and yet procurement staff are still faced with challenges in the procurement environment. Such riddles relate to continuous poor policy implementation and operational flaws in supply chain management. Institutions overspend budgets; if they don't overspend they underspend the budget which is as it was exposed in this

paper. The remedies should be applied in terms of PAJA requirements which stipulate that institutions should have measures to address conflicts and complaints regarding procurement claims procedures. How well the procurement procedure is implemented will depend on the scope of training provided in the procuring authorities. Such can be achieved by enforcing code of conducts for officials. Procurement authorities should develop; strengthen skills, abilities and processes and resources within the procurement environments (DeCorby-Watson et al., 2018).

5. Conclusion and Recommendations

The public sector procurement procedure is a manifold procedures such as open restricted procedure, competitive and negotiated procedures. The professionalism and ethics, contract performance management, accountability and leadership, and reduce tolerance on corruption will serve as a recommendation for this study:

Professionalism and Ethics: It is imperative that leadership should value professionalism in the procurement environments. Officials in the procurement environment abide by the official code of conduct such as not to follow suppliers during the bid phase, suppliers should receive identical information during the solicitation phase, specification should be linked to function and to performance, individuals having a personal or financial interest with suppliers should be prohibited from any involvement. The occurrence of conflict of interest can arise when the procurement personnel's private interest such as outside professional relationships or personal financial assets interfere or appear to interfere with the proper performance of his or her professional functions or obligations. As such within the procurement environment, conflict of interest may arise in connection thereto. There is a need for development of professional cadre of procurement officials through the creation of certification of suitably qualified officials.

Contract Management Performance: Contract management performance is an area where improvement has to be continuously made. In terms of the oversight contract management, all contractual obligations should be settled and monies owing are paid within reasonable terms. However, in South Africa the policy will state that a supplier will be paid within 30 days and those 30 days will turn into months and years without the institutions or contracting authority having paid the supplier on time. Internal Audit and Risk Management units should conduct audits. The contract management have to safeguard the day to day procurement accomplishments follow the essence of and segments of the contract.

Accountability and Leadership: Accountability is essential to preserve faith in the integrity of procurement system and market transparency. The need to develop, nurture capacity and capability in the procurement environment cannot be overemphasized. The procurement risk and performance should be managed through strong management and internal control. Good supremacy can also be accomplished by exercising limpidity; timeous reporting and auditing that will deliver effective accountability. Governance which is fit for purpose is supreme in the procurement environment. Oversight and control is necessary as it support answerability and augment truthfulness. It aids to engender valued substantiation on the performance and effectiveness.

Reduce Tolerance on Corruption: Use data analytics to reduce corrupt activities in public procurement. The data analytics can assist institutions to inspect, transforming and modelling data with an aim of discovering critical and useful information. Such information can help institutions to arrive at a conclusion and supporting decision-making.

References

Ambe, I. M. & Badenhorst-Weiss, J. A. (2012). Procurement challenges in the South African public sector. *Journal of Transport and Supply Chain Management*, 6(44), 242–261.

Arrowsmith, S. & Quinot, G. (2013). Public procurement regulation in Africa. Cambridge (UK): Cambridge University Press.

Auditors/Global, Institute of International Auditors (IIA). (2011). Supplemental guidance: Public sector definition. Altemonte Springs (FL): Global Headquarters of Institute of InternationalAuditors.

Bolton, P. (2006). Government procurement as a policy tool in South Africa. *Journal of Public Procurement*, 6(3), 193–217.

Bolton, P. (2008). The public procurement system in South Africa: Main characteristics. *Public Contract Law Journal,* 37(4), 781–802.

Bolton, P. (2016). Public procurement as a tool to drive innovation in South Africa, *Potchefstroom electronic Law Journal/Potchefstroomse electroniese Regsblad,* 19(1), 1-35.

CIPS (Chartered Institute of Purchasing & Supply - Austrialia. (2007). Contract management guide. Melbourne (AU): CIPS Australia.

Crandall, R. E., Crandall, W. R. & Chen, C. C. (2015). Series on Ressources Management. Principles of supply chain management.Second Edition New York (NY): CRC Press/Taylor & Francis Group.

Davey, J. & Gatenby, A. (2016). The government procurement review. 4th ed. London (UK): Law Business Research. Ilkeston.Derbyshire:Encompass Printing Solutions (UK).

DeCorby-Watson, et al. (2018). Effectiveness of Capacity building interventions relevant to public health practices: a systematic review. Toronto: BMC Public Health.

Dlamini, W. M. & Ambe, I. M. (2012). The influence of public procurement policies on the implementation of procurement best practices in South African universities. *Journal of Transport and Supply Chain Management*, 6(1), 277–293.

Fourie, D. J. (2015). Procurement in the South African public service: A reflection of the ethical and legislative fraework. *Public and Municipal Finance,* 4(2), 38–45.

Institute of Risk Management South Africa (IRMSA). (2015). IRMSA risk report: South African risks 2015. 1st ed. Sandton (ZA): IRMSA.

Junior, S. (2015). Nurturing domestic firms through public procurement: A comparison between Brazil and Japan. *Public Policy and Administration*, 31(1), 29–50.

Kabega, C., Kule, J. W. & Mbera, Z. R. (2016). Effect of procurement practices on performing of public projects in Rwanda: A case study of Bugesera district office construction project. *International Journal of Economics, Commerce and Management*, *United Kingdom,* IV(5), 377–396.

Majila, T., Taylor, J. D. & Raga, K. (2014). A comparative analysis of anti-corruption legislation and anti-corruption agencies in the Eastern Cape and Northern Provinces: *Journal for Transdiscilinary Research in Southern Africa*, 10(1), 219-240.

Mazibuko, G. & Fourie, D. J. (2017). Manifestation of unethical procurement practices in the South African public sector. *African Consortium of Public Adminstration (ACPA)*, 9(9), 106-117.

Mentzer, J. (2007). Handbook of global supply chain management. Thousand Oaks (CA): SAGE Publications.

OECD. (2016). Preventing Corruption in Public Procurement. Paris: OECD.

Quinot, G. (2014). An institutional legal structure for regulating public procurement in South Africa: Research report on the feasibility of specific legislation for National Treasury's newly established. Pretoria (ZA): National Treasury.

Raga, K., Bayat, M. S. & Ferrera, N. (2012). Nature and extent of procurement management relationships between the provincial governement of Eastern Cape and the Building Industry. *Kuwait Chapter of Arabian Journal of Buainess and Management Review*, 1(7), 1-100.

Sigma. (2011). Public procurement. What are the public procurement procedures and when can be they used. Brief 10. January 2011. www.sigmaweb.org.

South Africa, Republic. (1996). Consitution of the Republic of South Africa Act, 1996 (Act 108 of 1996). Pretoria (ZA): Government Printer.

South Africa, Republic. (1999). Public Finance Management Act, 1999 (Act 1 of 1999) (PFMA). . Pretoria (ZA): Government Printer.

South Africa, Republic. (2000a). Promotion of Access to Information Act, 2000 (Act 2 of 2000) (PAIA) Pretoria (ZA): Government Printer.

South Africa, Republic. (2000b). Promotion of the Administration of Justice Act, 2000 (Act 3 of 2000) (PAJA) Pretoria (ZA): Government Printer.

South Africa, Republic. (2000c). Preferential Procurement Policy Framework Act, 2000 (Act 5 of 2000) (PPPFA). Pretoria (ZA): Government Printer.

South Africa, Republic. (2003a). Broad-Based Black Economic Empowerment Act, 2003 (Act 53 of 2003) (B-BBEEA). Pretoria (ZA): Government Printer.

South Africa, Republic. (2003b). Policy strategy to guide uniformity in procurement reform processes in government. Pretoria (ZA): National Treasury.

South Africa, Republic. (2003c). Municipal Finance Management Act, (Act 56 of 2003) (MFMA) Pretoria (ZA): National Treasury.

South Africa, Republic. (2004). Supply chain management: A guide for accounting officers/authorities. Pretoria (ZA): National Treasury.

South Africa, Republic. (2O12). Western Cape Provincial Treasury Instructions: Chapter 16A-Supply Chain Management: Goods and service. Cape Town, ZA: Western Cape Provincial Treasury.

South Africa, Republic. (2015). Standard for uniformity in construction procurement. Pretoria (ZA): Government Printer.

South Africa, Republic. (2015a). South African National Accreditation System: SANS 10845-1. Construction procurement Part 1: Process, methods and procedures. Pretoria (ZA): National Treasury.

South Africa, Republic. (2015b). Construction Industry Development Board (CIDB). Standard for uniformity in construction procurement. Pretoria (ZA): Government Printer.

South Africa, Republic. (2015c). 2015 Public sector supply chain management review. Pretoria (ZA): National Treasury.

South Africa, Republic. (2016). SCM review update 2016. Pretoria (ZA): National Treasury.

South Africa, Republic. (2017a). Capital planning guidelines. Pretoria (ZA): National Treasury.

South Africa, Republic. (2017b). National Treasury audited consolidated financial statements. Pretoria: National Treasury.

South Africa, Republic. (2018). Industrial Policy Action Plan 2018/19-2020/21, Economic Sectors, employment and infrastrure development cluster. Pretoria: Department of Trade and Industry.

South Africa, Republic. (2018-19). Consolidated General Report on National and Provincial audit outcomes. PFMA 2018-19. Pretoria: Auditor General of south Africa.

South Africa, Republic. (2019a). The Construction Industry Development Board (CIDB) in the Construction Monitor – Supply and Demand. Johannesburg: CIDB.

South Africa, Republic. (2019b). State of Local Government Finance: Section 71 quarter 4 local government results as at 30 June 2019. Pretoria: National Treasury.

South Africa, Republic. (2019c). Budget Review 2019. Pretoria: National Treasury.

South Africa, Republic. (2020a). Public infrastructure delivery and construction sector dynamism in the South African economy. Pretoria (ZA): Presidency.

South Africa, Republic. (2020b). Draft Public Procurement Bill. Pretoria: National Treasury.

Taylor, J. D. & Raga, K. (2010). Preferential procurement: A case Study of South Africa. *Working Paper,* 13, 6.

UNODC. (2013). Transparency, objectivity and competition in public procurement. Legal assessment of Mexico's compliance with Article 9 of the United Nations. Convention Against Corruption (UNCAC) in the Federal Gove. New York: UNODC.

UNOPS. (2011). Transparency and public procurement. Supplement to the 2011 annual statistical report on United Nations procurement. UNOPS and United Nations Global Marketplace (UNGM). New York: UNOPS.

Van Weele, A. (2010). Purchasing and supply chain management: Analysis, strategy, planning and practice. 5th ed. Hampshire: CENGAGE Learning.

World Bank. (2016). Benchmarking public procurement 2016: Assessing public procurement systems in 77 countries. Washington, DC: World Bank Group.

World Trade Organisation (WTO). (1994). WTO GPA and the UNCITRAL Model Law on Procurement of Goods, Construction and Services (1994). Geneva: WTO.

World Trade Organisation (WTO). (2011a). Government procurement agreement. Geneva (CH): WTO Publications. Geneva: WTO.

World Trade Organisation (WTO). (2011b). UNCITRAL: Model law on public procurement World Trade Organisation (WTO). Geneva: WTO.

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Technical Efficiency Analysis of Millet Production in the Sahel Region of Burkina Faso

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Abstract: Millet is the basic cereal crop which contributes to rural households' food security in the Sahel region of Burkina Faso. This study assesses the technical efficiency and its determinants of millet farmers in this region. A stochastic frontier approach is followed to analyze data collected on 106 households randomly selected in 2017. The mean technical efficiency is estimated at 71.23% implying that millet production may be increased by 28.77% with the same resources used by farmers. The results show that formal education, off farm income, breeding, and access to credit are the main factors affecting the production efficiency. The study recommends decisions makers to take appropriate measures regarding these factors, to enhance millet productivity in the Sahel region.

Keywords: *Millet, Technical Efficiency, Stochastic Frontier Approach, Sahel Region, Burkina Faso.*

1. Introduction

In Burkina Faso, agriculture plays an important role in the socio-economic development. The agricultural sector employs over 70% of the labor force and accounts for about 34% of the GDP (Coulibaly & Savadogo, 2019). The basic crops grown are cereals which contribute to approximately 60% of households food needs (FAO, 2013). Sorghum, millet and maize are the three main crops that provide food security for rural people. Increasing cereal production is therefore one of the priority objectives of Burkina Faso authorities. After the 2008 food crisis, emergency measures were taken to increase yields and agricultural production. Among these measures is notably the promotion of the use of improved seeds, fertilizers, suitable agricultural equipment as well as the popularization of good agricultural practices. Despite these measures, agricultural productivity remains very low (Coulibaly & Savadogo, 2019) and Burkina Faso still experiences food crisis situations, especially in arid areas like the Sahel region where rainfall is very low and variable. Three agro ecological zones exist in Burkina Faso: the sahelian zone, the sudano-sahelian zone and the pre-guinean zone.

The sahelian zone is the least wet area (less than 600mm of rainfalls per year), the sudano-sahelian zone is moderately watered (between 600 to 900mm of rainfalls per year) and the pre-guinean zone is the potential zone for agriculture with more than 900mm of rainfalls per year. Due to poor soils and uncertain rainfalls in the Sahelian zone, millet is the most adapted food crop to be grown in this area. It represents around 70% of the total cereal production on average per year and contributes significantly to the food security of people living in this zone. Despite this importance, millet production remains fluctuating over time and below expectations. Rural populations frequently experience food insecurity. In 2012, the Sahel region as well as other regions of the country was confronted with the second food crisis in 3 years (FAO, 2019). Beyond the climatic conditions, the lowness of millet productivity in the region raises questions about the efficiency with which resources are used by farmers. For Keane et al. (2009), it is generally known that producers in most developing countries are operating under their potential production.

The high level of inefficiency that farmers face highlights that innovation and technology adoption are not the only constrains for agriculture development in those countries (Chavas et al., 2005). Thus, Brümmer (2006) argued that the reduction of inefficiency in agricultural production is a key factor in policies aiming at both reaching food security and reducing poverty in developing countries. In the specific case of Burkina Faso, it is found that technical efficiency contributes to poverty reduction (Noufé, 2020). It is thus very important to address issues related to production efficiency in the agricultural sector. The overall objective of this paper is to identify factors affecting millet farmers' technical efficiency in the Sahel region of Burkina Faso. It specifically assesses the level of millet farmers' technical efficiency and identifies the key factors affecting their technical efficiency. A number of studies have addressed the technical inefficiency of cereals farmers in Burkina Faso. Kaboré (2007) estimated rice farmers' technical efficiency at 83% in the *valley of Kou* and at 76% in *the valley of Bagré*. Wouterse (2008) showed that both intercontinental migration and education

increase efficiency in cereals production. Combary (2016) estimated the level of farmers' allocative efficiency at 35.8%.

However, none of the previous studies has focused on the Sahel region where millet is the most important cereal, crop assuring rural people food security. Due to the low productivity of millet inducing food insecurity in the region, it is very important to highlight factors which hamper millet production. The results from our analysis may thus contribute to take appropriate measures to stimulate production efficiency and strengthen rural people food security in this region. The rest of the paper is structured as follows. Section 2 presents the review of literature. Section 3 is devoted to the methodology. Section 4 discusses the estimated results and section 5 concludes the paper and draws consistent policy implications.

2. Literature Review

Common Methods of Technical Efficiency Analysis: Common methods used to analyze production efficiency are Data Envelopment Analysis (DEA), Mamlquist Index and Stochastic Frontier analysis (SFA). Even if DEA and SFA are widely used, SFA which is a parametric method specifying the production as function of inputs and two error terms (common error term and the inefficiency component) is well indicated to analyze production efficiency in developing countries like Burkina Faso (Thiam et al., 2001; Njeru, 2010; Ogundari & Awokuse, 2016). Many factors like climatic conditions may affect agricultural production. So, the assumption that all deviation from the frontier is due to inefficiency in DEA method is unrealistic. Moreover SFA has the advantage of allowing inferential statistics. This study therefore follows a stochastic frontier approach.

The Stochastic Frontier Approach: Farrell (1957) argued that the traditional neoclassical assumption that all firms are assumed to be fully efficient is unrealistic because in reality, some firms are more efficient than others. Efficiency means that the maximum output is reached with the minimum input. So, a production unit is considered as relatively inefficient if another one uses an inferior or equal amount of inputs to produce the same or more level of output. A weakness of Farrell (1957) frontier approach is the consideration of the inefficiency component as deterministic like in non-parametric methods. The stochastic frontier has been introduced as an improvement of Farrell (1957) frontier approach by Aigner et al. (1977) followed by Meeusen & Van den Broeck, (1977). In this method, any deviation from the frontier is explained by two components: the error term and the inefficiency component.
The production frontier is expressed as follow:

$$Y_i = f(X_{ij}\ ;\ \beta)e^{(\emptyset_i - \eta_i)}$$

$$\emptyset_i - \eta_i = u_i;\ i = 1, \dots N; \quad j = 1, \dots . J \qquad (1)$$

Y_i is the quantity of output generated by production unit i ; X_{ij} a vector of inputs and β a vector of parameters to be estimated. N is the number of production units and J the number of inputs. Specifying a translog production function and applying logarithm to equation (1) yields:

$$lnY_i = \beta_0 + \sum_{j=1}^{J} \beta_j X_{ij} + \sum_{j=1}^{J}\sum_{k=1}^{J} \beta_{jk} X_{ij}X_{ik} + (\emptyset_i - \eta_i), \qquad \emptyset_{i_i} - \eta_i = u_i \qquad (2)$$

$\emptyset_{i_i}$ is the common random error term. It is symmetrically distributed of zero mean and constant variance $\sigma_{\emptyset}^2$ and captures statistical noise or measurement error. η_i represents the asymmetric error term assumed to be independently and identically distributed ($\eta_i \sim N(\mu, \sigma_\eta^2)$). The equation explaining the technical inefficiency component η_i is specified as follow:

$$\eta_i = \delta\, Z_{ij} + W_i \qquad (3)$$

Z_{ij} is a vector of factors affecting the technical inefficiency, δ a vector of parameters to be estimated and W_i a random variable distributed as truncation of normal distribution of zero mean and variance σ_η^2 (Coelli, 1995).
Aigner et al. (1977) parameterized the variances of the model as follows:

$\sigma^2 = \sigma^2_{\emptyset_i} + \sigma^2_\eta$ and $\gamma = \sigma^2_\eta / \sigma^2_u$ with $0 < \gamma < 1$. $\gamma = 0$ means all deviations from the frontier are fully explained by the error term and $\gamma = 1$ implies all deviations from the frontier are due to the technical inefficiency.

The technical efficiency (TE_i) of production unit i is defined as the ratio between the observed output (Y_i) and the frontier output (Y_i^*) for a given amount of inputs used:

$$TE_i = \frac{Y_i}{Y_i^*} = \frac{f(X_{ij}\ ;\ \beta)e^{(\emptyset_i - \eta_i)}}{f(X_{ij}\ ;\ \beta)e^{(\emptyset_{i_i})}} = e^{(-\eta_i)} \qquad (4)$$

Equations (4) and (3) are simultaneously estimated. The one step estimation technique is recommended as it yields consistent estimates (Coelli, 1995, Chiona et al., 2014).

3. Methodology

Empirical Model: We specify a translog function as follows:

$$lnY_i = \beta_0 + \sum_{j=1}^{5} \beta_j X_{ij} + \sum_{j=1}^{5}\sum_{k=1}^{5} \beta_{jk} X_{ij} X_{ik} + (\emptyset_i - \eta_i) \qquad (5)$$

Y_i is the quantity of millet harvested by household i, X_{i1} stands for chemical fertilizers, $X_{i2}$for manure, X_{i3} for labor, X_{i4} for total land area devoted to millet farming. $\beta_{0,}$ β_{ij} are parameters to be estimated, $\emptyset_i$ the error term and η_i the technical inefficiency component. Factors explaining technical inefficiency are expressed as follows:

$$ln\,\eta_i = \delta_0 + \textstyle\sum_{j=1}^{10} \delta_j z_{ij} + W_i \qquad (6)$$

z_{ij} is a vector of 10 variables: age, gender, formal education, dependency ratio, off farm income, breeding income, distance to nearest market, access to the village, received transfers, and access to credit. δ_0 , δ_j, are parameters to be estimated and W_i is the error term.

Diagnostic Analysis: To draw consistent conclusions, appropriate specifications are crucial in SFA analysis. It is thus useful to prove that the translog specification of the production function is suitable and that there is a technical inefficiency in millet production before showing that explanatory variables significantly affect this inefficiency. The following hypotheses are tested:

- The Translog production function is more suitable than the Cobb-Douglas production function
  Under the null hypothesis $H_{01,}$ the Cobb-Douglas function is more appropriate:
  H_{01}: $\beta_{22} = \beta_{33} = \beta_{44} = \beta_{12} = \beta_{13} = \beta_{14} = \beta_{23} = \beta_{24} = \beta_{34} = 0$
- There is an inefficiency in cereal production ($\gamma \neq 0$)
  Under the null hypothesis H_{02}: $\gamma = 0$ meaning absence of any inefficiency in millet farming. In this case, an ordinary production function is used and estimated by Ordinary Least Squares (OLS).
- Variables used in the model globally explain the technical inefficiency

Under the null hypothesis H_{03}, no variable explains the technical inefficiency:
$\delta_1 = \delta_2 = \cdots = \delta_{10} = 0$
The three tests are operated by computing the generalized likelihood ratio:
$\lambda = -2 * \{\ln [L(H_0)] - \ln [L(H_1)]\}$. $[L(H_0)]$ and $[L(H_1)]$ are respectively values of the likelihood function under the null hypothesis H_0 and under the alternative hypothesis H_1. λ is a Khi Two mix distribution.

Elasticities and Returns to Scale: Elasticities measure the sensitivity of production to changes in input. In the translog stochastic production function, elasticities are expressed as:

$$e_j = \frac{\partial lnY_i}{\partial lnX_{ij}} = \beta_j + 2\beta_{jj}\bar{X}_{ij} + \sum_{k \neq j} \beta_{jk}\bar{X}_{ik} \qquad (7)$$

The returns to scale (RS) measure the sensitivity of the level of production to proportional variations in all inputs. RS is computed by summing the e_j: $RS = e_1 + e_2 + e_3 + e_4$ (8)

If RS = 1, the returns to scale are constant; if RS <1, the returns to scale are decreasing and if RS> 1, the returns to scale are increasing.

Data: The data used in this paper are extracted from a survey data collected in 2017 for evaluating the *"National community based Program, Phase II (PNGT2)"*. The program *PNGT2* was launched in 2013 to contribute to an increase in productivity, added values and agricultural income with a view to contributing to national economic growth and poverty reduction. The survey was thus carried out by a national laboratory (LAQADS[1]) in order to contribute to the apprehension of households living conditions in rural areas. Data collected on 2160 households randomly selected cover all regions of the country and include household's demographic characteristics and living conditions, soil characteristics, agricultural and livestock production etc. A total of 224 households have been surveyed in the Sahel region in 2017 by the LAQADS. Among those households, 106 are millet farmers. The sample in this analysis is all the 106 households in the data set who are engaged in millet farming in this region. Table 1 describes variables used for the empirical analysis. It shows that households are mostly headed by men (95.25 %) and few have received formal education (16.03 %). In the study area, households are also characterized by a high dependency ratio (52.97%).

Table 1: Description, Mean and Standard Deviation of the Variables Used for the Empirical Analysis

Variable		Description	Mean	Standard Deviation
		Dependent variable		
Output	Y	Quantity of millet harvested (kg)	587.49	1192.35
		Production Function Variables		
Fertilizers	X_1	Quantity of chemical fertilizers used in millet farming (kg)	11.90	23.009
Manure	X_2	Number of cartloads equivalent of manure used in millet farming	4.44	8.31
Labor	X_3	Quantity of labor used in millet farming (man-days)	108.04	142.96
Area	X_4	Total area devoted to millet farming (ha)	1.576	1.64
		Determinants of Technical Inefficiency		
Age		Age of the household head (number of years)	49.80	15.21
Gender		1 if the household head is male and 0 otherwise	0.9528	0.213
Education		1 if the household head has received formal education and 0 otherwise	0.16037	0.3686
Dependency ratio		Ratio of the household non active members	0.5297	0.1718
Breeding income		income-generated from breeding (FCFA)	228298.3	550065.8
Off farm income		income-generated from off farm activities (FCFA)	257418	2, 320000
Distance		Distance to the nearest market (km)	20.77	26.32
Good access		1 if the farmer living area is accessible in rainy season and 0 otherwise	0.51886	0.5020
Transfer		1 if the household received extra household cash transfer	0.8207	0.3853
Access to credit		1 if household's members have access to credit and 0 otherwise	0.3679	0.4845

Source: Author' construction from data PNGT2 2017.

4. Results and Discussion

Diagnostic Test Results: Table 2 presents hypothesis test results. The likelihood ratio (λ =1, 029.62) calculated in testing hypothesis H_{01} is significant (P=0.000). The translog specification is more suitable than

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the Cobb-Douglass one. The value of the likelihood ratio computed from the estimation of the translog production function by the OLS and by the maximum likelihood method is λ=329.46. This Value is significant at 1% level (P=0.0000) and the null hypothesis is not accepted. The conclusion is that there is a technical inefficiency in cereal production. Similarly, the ratio λ =4, 356.21 generated in the third hypothesis test is significant at 1% level (p=0.0000). The null hypothesis is not accepted implying that the variables used globally explain the technical inefficiency. Based on the diagnostic test results, it is can be concluded that the results are very consistent.

Table 2: Validation of Hypotheses

Null hypothesis	Statistics (Probability)	Decision
H_{01} : $\boldsymbol{\beta_{jk} = 0}$ The translog function can be reduced to a Cobb-Douglass one	1,029.62*** (0.0000)	H_{01} rejected
H_{02} : $\boldsymbol{\gamma = 0}$ There is no technical inefficiency in millet production	329.46 *** (0.0000)	H_{02} rejected
$\mathbf{H_{03}}$: $\boldsymbol{\delta_1 = \delta_2 = \cdots = \delta_{10} = 0}$ No variable explains the technical inefficiency	4,356.21*** (0.0000)	H_{03} rejected

Source: Author construction from data PNGT2 2017
***1 % significant

The Level of Technical Efficiency of Millet Farmers: Table 3 classifies households according to their level of technical efficiency. The mean technical efficiency is estimated at 71. 23%. The level of technical efficiency is ranged from 5.94 % to 92.19 % across households. These statistics show that farmers are operating under their potential production level. They may increase their production by 28.77% with the same resources. The factors inducing such inefficiency must be addressed to increase millet productivity in the region.

Table 3: Frequency Distribution of Technical Efficiency of the Millet Farmers

Level of Efficiency (%)	Number of Households	Percentage of Households
0-25	7	6.60
25-50	5	4.71
50-75	37	34.91
75-100	57	53.78

Mean technical efficiency = 71.23 %

Minimum technical efficiency= 5.94 %

Maximum technical efficiency = 92.19 %

Source: Author construction from data PNGT2 2017

Maximum Likelihood Estimates of the Production Function: Table 4 presents the estimates of the translog production function. All inputs factors positively and significantly affect the quantity of millet harvested by the households. The use of chemical fertilizers and manure by farmers is so crucial because soils are generally of poor quality in the Sahel region. Fertilizers use is thus recommended to endow soils with necessary nutrients for millet growth. The positive correlation between land area and output level is suitable to Burkina Faso context where producers tend to increase their output by extensification (Callo-Concha et al., 2012). Similar results are found by Jayakody & Dishanka in Sri Lanka and by Aduba et al. (2013) in Nigeria where fertilizers and land area are the major factors explaining the production level. Labor has also a positive effect on production. Due to poor production technologies adopted by farmers, labor is hugely needed for an appropriate farm management especially for weeding. Households' members have to spend most of their time on their farms during the rainy season.

The Determinants of Technical Efficiency: The results of the determinants of technical inefficiency are presented at the bottom of table 4. A total of four (4) variables significantly affect millet production efficiency in the Sahel region: formal education, breeding income, access to credit and good access to farmers' living area in rainy season. The results of formal education are consistent with the human capital predictions. Households headed by farmers who have received formal education are expected to use resources more efficiently as it is argued that those farmers are opened to best agricultural practices and rationally manage their farms (Becker, 1993). Our findings are similar to the results found by Agboola (2016) for Nigeria, and Alene & Hassan (2003) for Ethiopia. The lack of financial resources is one of the major constraints to agricultural development in countries such as Burkina Faso. Most farmers need financial support to purchase agricultural inputs in due time and to efficiently manage their farm activities. Indeed, Provision of credit enhanced timely purchase and efficient allocation of factor inputs to produce the maximum output.

Kuwornu et al. (2013) found that credit access is among major factors determining the technical efficiency level of maize farmers in Ghana. Access to credit is therefore very important to farmers' production decisions. Most farmers however lack collateral and are constrained in the formal credit market in Burkina Faso. Regarding income generated from breeding, Pender et al. (2002), argued that farmers in developing countries lie on livestock as an alternative to solving credit constraint. Especially in the Sahel region of Burkina Faso, breeding is an important activity for households. The climate of this area of the country is adapted to this activity and farmers use breeding to sustain their agriculture. Combining breeding to farming may thus be an important way of stimulating farmers' productivity. The results also show that good road infrastructure is a key factor in stimulating production efficiency. Farmers located in areas with good roads access in rainy season are more likely to better manage their farms as they are able to get access to both market and extensions services located at communal level.

On the contrary, farmers located in inaccessible zones in rainy season are constrained to market access which hampers their production performances. Road infrastructure improvement can be expected to raise the output price of the farmers and lower production cost through the reduced transportation cost of goods and services (Kiprono & Matsumoto, 2014). In the Sahel region, road infrastructures are however poor and this may hamper millet production.

Table 4: The Translog Frontier Production Function Estimates and the Determinants of Technical Efficiency

	Translog Production Function Estimates		
Variables		**Coefficient**	**Z-Statistic**
Constant	C	3.884	0.03
Chemical fertilizers	lnX_1	0.5368***	3.19
Manure	lnX_2	0.5805**	-2.18
Labor	lnX_3	0.7903***	4.86
Total millet area	lnX_4	1.184***	4.05
	lnX_1^2	0.0588	1.08
	lnX_2^2	0.1034	1.22
	lnX_3^2	-0.0263**	-1.98
	lnX_4^2	-0.0370	1.09
	lnX_1lnX_2	0.1008**	2.04
	lnX_1lnX_3	-0.1764***	-2.64
	lnX_1lnX_4	0.0781	0.98
	lnX_2lnX_3	0.0581	0.55
	lnX_2lnX_4	-0.0203	-0.17
	lnX_3lnX_4	0.0592	1.58
Determinants of Technical Inefficiency in Millet Farming			
Constant			
Age of household head		-0.0037	-0.74
Gender of household head		-0.2259	-0.59

Formal education of household head	-0.5328***	-3.00
Dependency ratio	0.5180	1.02
Off farm income	0.0109	0.85
Breeding income	-0.0342*	-1.64
Distance to the nearest market	0.0002	0.07
Good access to the village	-0.5679***	-2.89
Received transfers	-0.0937	-0.51
Access to credit	-0.3696**	-2.24
σ^2	4 .0882	
γ	0.90050	
Mean Technical Efficiency	71.23%	
	Chi2 (20)= 2058.62***	

Number of Observations =106

Source: Author estimation from data PNGT2 2017
***1% significant; **5% significant; *10% significant

Elasticities and Returns to Scale: The elasticities are presented in table 5. Millet production is sensitive to the four inputs resource variables. An increase of 1% in the total area and labor leads respectively to an increase of 0.504 % and 0.008 % in millet production while an increase of 1 % in chemical fertilizers and manure leads to an increase of 0.410 % and 0.57 % in millet production respectively. The computed value of the returns to scale by summing the elasticities is 1.49. This value which is greater than the unit indicates that the returns to scale are increasing. A simultaneous increase in expenditure on chemical fertilizers, manure, labor and farm area by 1% results in an increase of 1.49 % in millet production. This reflects a situation where the increase in the scale of production is profitable for producers. Millet farmers in the Sahel region must be encouraged to increase their scale of production in order to generate more agricultural income.

Table 5: Elasticities of Resources

Input Resource	Elasticity	Probability
Chemical fertilizers	0.4102***	0.0000
Manure	0.5728***	0.000
Labor	0.0083**	0.041
Total area	0.5043***	0.0000
Returns to Scale (RS)= 1.49		

Source: Author computing from results
** 5% significant; *** 1% significant

5. Conclusion and Policy Recommendations

Millet is the main cereal crop assuring the food security of rural households in the Sahel region of Burkina Faso. This study was carried out to analyze factors affecting the technical efficiency of millet production in this region. A stochastic frontier approach has been followed with a one-step estimation method leading to consistent results. The results show that farmers in the Sahel region are technically inefficient in millet farming. The mean technical efficiency is estimated at 71.23% implying that households have the possibility of increasing their production by 28.77% without resorting to an increase of their resources devoted to millet production. The results show that formal education, breeding, access to credit and good road infrastructure is the key factors affecting the millet production efficiency in the region. The study recommends decisions makers to take appropriate measures to enhance production in this region in order to improve rural people food security.

From our findings, it is observed that a low proportion of millet farmers attended formal education. At a short run, farmers need to be trained on how to efficiently manage their farms. At a long run, all policies aiming at increasing the level of school attendance in the zone have to be supported. In this way, the problem of civil

insecurity which hampers schools attendance has to be solved. The government should also improve road infrastructures in the region in order to facilitate farmers' access to market and extensions agents who are generally located at communal level. Also, the development of microfinance with the support of the government in the region may reduce credit constraint and stimulate production. As most of the farmers have no collateral, they must be well organized to get credit through group membership. Finally, farmers may be trained to integrated farm management combining agriculture and breeding. This may stimulate their production efficiency and improve rural households' food security in the Sahel region.

References

Aduba, J. J., Oladunni, O. A. & Onojah, D. (2013). Technical Efficiency of Smallholder Maize Farmers in Nigeria: The Stochastic Frontier Approach. *Global Journal of Current Research,* 1(14), 132–140.

Agboola, W. L. (2016). Land Management Practices and Technical Efficiency of Food Crop Farmers in North Central Nigeria: A Data Envelopment Analysis (DEA) Approach. *Asian Journal of Agricultural Extension, Economics & Sociology,* 10(2), 1–10.

Aigner, D., Lovell, C. A. K. & Schmidt, P. (1977). Formulation and estimation of stochastic frontier production models. *Journal of Econometrics,* 6(1), 21–37.

Alene, A. D. & Hassan, R. M. (2003). The determinants of farm-level technical efficiency among adopters of improved maize production technology in western Ethiopia. *Agrekon,* 42(1), 1–14.

Becker, G. S. (1993). Human Capital. 3rd ed., the university of Chicago Press,Chicago, IL.

Brümmer, B. (2006). Food Policy to alleviate rural poverty: the potential contribution of productivity growth in Agriculture and agricultural trade linearization. *Quarterly Journal of international Agriculture,* 45(1), 1–6.

Callo-Concha, D., Gaiser, T. & Ewert, F. (2012). Farming and cropping systems in the West African Sudanian Savanna, WASCAL research area: Northern Ghana, Southwest Burkina Faso and Northern Benin. ZEF Working Paper Series, ISSN 1864-6638, Center for Development Research (ZEF), University of Bonn.

Chavas, J. P., Petrie, R. & Roth, M. (2005). Farm Household Production Efficiency: Evidence From The Gambia. *American Journal of Agricultural Economics,* 87(1), 160–179.

Chiona, S., Kalinda, T. & Tembo, G. (2014). Stochastic Frontier Analysis of the Technical Efficiency of Smallholder Maize Farmers in Central Province, Zambia. *Journal of Agricultural Science,* 6(10), 108–118.

Coelli, T. (1995). Recent developments in frontier modeling and efficiency measurement. *Australian Journal of Agricultural Economics,* 39(3), 219–45.

Combary, S. O. (2016). Analysing the efficiency of farms in Burkina Faso. *African Journal of Agricultural and Resource Economics,* 12(3), 242–256.

Coulibaly, A. D. & Savadogo K. (2019). Does fertiliser subsidy increase maize productivity in Burkina Faso. Development in Practice, DOI: 10.1080/09614524.2019.1670783.

FAO. (2013). Analyse des incitations et pénalisations pour le maïs au Burkina Faso. . Série rapport pays SPAAA, FAO: Rome.

FAO. (2019). Food security situation deteriorating in northern areas due to heightened violence. GIEWS Update, FAO: Rome.

Farrell, M. J. (1957). The Measurement of Productive Efficiency. *Journal of the Royal Statistical Society Series A (General),* 120(3), 253–290.

Jayakody, S. & Dishanka, S. (2019). An Estimation of Technical Efficiency of Tea Smallholdings in Ratnapura District of Sri Lanka. *Journal of Social and Development Sciences,* 10(4), 1–11.

Kaboré, D. P. (2007). Efficience technique de la production rizicole sur les périmètres aménagés du Burkina Faso. Série document de travail DT-CAPES n°2007-35, CAPES, Burkina Faso.

Keane, J., Page, S., Kergna, A. & Kennan, J. (2009). Climate Change and Developing Country Agriculture: An Overview of Expected Impacts, Adaptation and Mitigation Challenges, and Funding Requirements. ICTSD–IPC Platform on Climate Change Agriculture and Trade, International Centre for Trade and Sustainable Development, Geneva, Switzerland and International Food & Agricultural Trade Policy Council, Washington DC, USA, Issue Brief No.2.

Kiprono, P. & Matsumoto, T. (2014). Roads and farming : The effect of infrastructure improvement on agricultural input use, farm productivity and market participation in Kenya. In CSAE conference 2014: Economic development in Africa, The University of Oxford.

Kuwornu, J. K. M., Amoah, E. & Seini, W. (2013). Technical Efficiency Analysis of Maize Farmers in the Eastern Region of Ghana. *Journal of Social and Development Sciences,* 4(2), 84–99.

Meeusen, W. & Van den Broeck, J. (1977). Efficiency Estimation from Cobb–Douglas Production Functions with Composed Error. *International Economic Review,* 18, 435–444.

Njeru, J. (2010). Factors Influencing Technical Efficiencies among Selected Wheat Farmers in Uasin Gishu District, Kenya. African Economic Research Consortium, Nairobi, Kenya.

Noufé, T. (2020). Agricultural productivity and poverty of agricultural households in Burkina Faso. *African Journal of Economic and Sustainable Development,* 7(4), 287–306.

Ogundaria, K. & Awokuse T. (2016). Land Tenure and Technical Efficiency of Rice Farms in Thailand. . Paper presented at 2016 World Bank Conference on Land and Poverty, The World Bank - Washington DC.

Pender, J. L., Nonya, E., Jagger, P. & Serunkuuma, D. (2002). Strategies to increase agricultural productivity and reduce land degradation: evidence from Uganda. Paper presented at the Worshop on Methodological Advances for Assessing Impacts of NRM Research. 6-7 december, ICRISAT, Pantancheru, India.

Thiam, A., Bravo-Ureta, B. E. & Rivas, T. (2001). Technical efficiency in developing country agriculture: a meta-analysis. *Agricultural Economics,* 25, 235–243.

Wouterse, F. (2008). Migration and Technical Efficiency in Cereal Production: Evidence from Burkina Faso. IFPRI, Dakar, Senegal.

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2020 Stimulus Coronavirus Aid, Relief and Economic Security Act: Comparative Analysis of President Roosevelt's New Deal Programs and President Obama's American Recovery and Reinvestment Act of 2009

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Abstract: America is facing an economic disaster and is in need of federal relief to remain leading nation. Is America currently facing another Great Depression? In the 1930s the United States suffered from an economy downturn; the stock market crashed, spending declined, there was a drop in production, jobs were lost, bills went unpaid, and the market for produce reduced. President Franklin D. Roosevelt implemented the New Deal Programs to recover the economic damage of the United States. President Barack Obama inherited a stressed economy from former President George W. Bush with a national debt of $10.627 trillion. As President Roosevelt once did, President Obama is now working toward a plan to recover the damaged United States economy? The uncontainable depression later referred to as the Great Depression attacked the economy of the United States. In 2007 the United States began to take an economy downtown again. President Franklin D. Roosevelt implemented the New Deal Programs to recover the economic damage of the United States. President Barack Obama inherited a stressed economy from former President George W. Bush with a national debt of $10.627 trillion.

Keywords: *New Deal Programs, Great Depression, American Recovery and Reinvestment Plan.*

1. Introduction

Wall Street has taken a turn for the worst, American citizens are losing their homes, American Corporations are threaten to file bankruptcy, the value of the American dollar is declining and the National debt is at an all-time high. America is facing an economic disaster and is in need of federal relief to remain leading nation. Is America currently facing another Great Depression? In the 1930s the United States suffered from an economy downturn; the stock market crashed, spending declined, there was a drop in production, jobs were lost, bills went unpaid, and the market for produce reduced. The uncontainable depression later referred to as the Great Depression attacked the economy of the United States. It revealed that the economic interrelatedness implied that no area of the economy was insusceptible to negative impact. In 2007 the United States began to take an economy downtown again. The stock market is suffering, spending has decreased, the cost of produced has increase, and as of March 2009, 8.5% of American Citizens suffer from unemployment. President Franklin D. Roosevelt executed the New Deal Programs to recover the economic damage of the United States. President Barack Obama inherited a stressed economy from former President George W. Bush with a national debt of $10.627 trillion. As President Roosevelt once did, President Obama is now working toward a plan to recover the damaged United States economy.

The purpose of this study is to examine and identify the similarities and differences in the Great Depression of 1929 and the current United States economic depression. By conducting a research of this magnitude, one will be able to identify whether the methods used by President Roosevelt to address the Great Depression can provide President Obama with a road map or a lessons learned structure. The study will provide governmental officials and economic specialist with an insight on economy stressors that break the United States economy and threaten its stability as the leading nation. The common foundation shared by President Roosevelt and President Obama is that both presidents entered into their Presidency working and striving to clean up an economic disaster what was not created on their watch. When the first hundred day of his Presidency President Roosevelt enacted new programs to provide relief to the American people and address the unprecedented political capital. "Throughout the nation men and women, forgotten in the political philosophy of Government, look to us here for guidance and for more equitable opportunity to share in the distribution of national wealth. I pledge myself to a new deal for the American people. This is more than a political campaign. It is a call of arms" (The Roosevelt Week).

In Remarks of Senator Barack Obama: The Common Stake in America's Prosperity address, President Obama opened his address with reflects to the actions taken by President Roosevelt to address the Great Depression. "Roosevelt called for a "re-appraisal of values." He suggested that in the United States: "our right to live must also include the right to live comfortably; that government must favor no small group at the expense of all its citizens; and that in order for us to prosper as one nation, "the responsible heads of finance and industry, instead of acting each for himself, must work together to achieve the common end" (Remark of Senator Barack Obama…, 1)".

President Obama felt that the American vision to restore our economic downturn required much more than just replacing a failed President. Restoration and renewal had to be incorporated into the lives of American Businesses and American people. Each individuals needs to work collective to restore the economy as during the Great Depression the United States realized all things working together affects the success or failure of the economy. President Obama is approaching his first hundred days in office and he too has taken efforts to address the outcry of the American people and the inherited national debt.

The New Deal: The programs presented a mean to reverse the economic disaster; it provided relief with a broad program that involved a level of policy planning and coordination that was beyond the capacity of the Congress. The goal of this complex package of economic programs was to provide relief to unemployed individuals, reform businesses and their financial practices and promote recovery during the economic depression. The National Recovery Administration and the Public Works Administration implemented the National Industry Recovery Act (NIRA) of 1933 to create jobs through massive public works efforts and coordinate actions of major industries. "However, the New Deal was opposed by economic conservatives (who accused Roosevelt of leading the nation down the road of communism) and by justices of the Supreme Court. In Schechter Poultry Corp v. United States (1935), the Court invalidated the Recovery Act by a 5-4 vote, ruling that it usurped powers reserved to the states" (Patterson, 82).

President Roosevelt encountered various problems and negative feedback from other branches of the government and citizens when attempting to address the economic issues of the nation. He continued to keep his focus and stress the importance of the New Deal Programs. The most notable programs implemented by President Roosevelt under the New Deal were as follows: 1. Federal Deposit Insurance Corporation (FDIC), which insured deposits in banks up to $5,000; 2. Civil Works Administration (CWA), which provided temporary jobs to millions of the unemployed and 3. National Labor Relations Act (NLRA), which set up the National Labor Relations Review Board to supervise labor-management relations. President Roosevelt implemented a number of other programs, most of which still exist today. The existing programs have been modified as the centuries and the nation began to globalize, but they still serve their intended purposes.

American Recovery and Reinvestment Plan: President Obama has received both negative and positive feedback from other branches of the government and supporters. He is focused on addressing the economic damaged that has impacted the United States over recent years. President Obama introduced the American Recovery and Reinvestment Act of 2009. "The plan invests in clean energy, health care, education and infrastructure; cuts taxes for American families and businesses; and helps protect the most vulnerable families from economic harm during the recession. This plan will also break from conventional Washington approaches to spending by ensuring that public dollars are invested effectively and that the economy recovery package is fully transparent and accountable to the American people" (American Recovery and Reinvestment Plan, 1). President Obama's plan was enacted into legislation on February 17, 2009 and became the American Recovery and Reinvestment Act of 2009. The Act is much more encompassing then the Economic Stimulus Act of 2008 that principally provided taxpayers with a rebate check.

The American Recovery and Reinvestment Act comprise federal tax relief, extension of unemployment benefits, social welfare provisions, domestic spending in education, health care, infrastructure and energy sectors. In addition to the economic recovery the act also include non-economic related relief, which includes long-term efforts to study the effectiveness of medical treatment and limitation on executive responsibility and compensation in federally aiding banks. President Obama's plan is encompasses many of the attributes included in President Roosevelt's plan, except are has been expanded to encompass the ever-changing economic aspects of the 21st century. "We certainly do not face a test of the magnitude that Roosevelt's

generation did. But we are tested still. We meet at a time when much of Wall Street is holding its collective breath. Here at the NASDAQ and all across America, the tickers are being watched with heightened anxiety and considerable uncertainty. There is much anticipation about tomorrow's meeting of the Fed, and with each new day, there is hope that the headlines will bring better news than the last" (Remarks of Senator Barack Obama, 2).

2. Literature Review

There have been a number of studies conducted by journalist, novelist, essayist; historians and economist have contributed to the general understanding of the past and present economy of the United States. The authors analyzed have collectively concluded economy of the United States plays a major role in the nation's ability to remain dominant, the resolves of uncontrolled and use less spending of federal dollars, and the need of more federal rules and regulations that govern the American Businesses. Each author offers a descriptive image of how the works of President Roosevelt aided the United States in economic recovery in both negative and positive aspects. In addition to how the efforts of President Obama will affect America in the long run. The New Deal Programs implemented by President Roosevelt addressed many of the issues the United States faced in the economy, but he still felt more needed to be done. President Roosevelt wrote a document entitled "An Economic Bill of Rights," which was recommendation for Congress to adopt in order maintain a fair and stable economy and concentrate all of the nation's energy and resources on winning the war. In 1944 after many of the New Deal Programs were implemented there still need to stabling focus that kept the economy afloat. President Roosevelt outlined a total of five recommendations among which included the following: 1. realistic tax law, 2. a continuation of the renegotiation of war contracts, 3. a cost of food law, 4. early enactment of the stabilization statue of October 1942, and 5. a national service law.

The realistic law called for the taxation of all unreasonable individual and corporate profit and the reduction of the war. The second recommendation of a continuation of the law for the renegotiation of war contracts suggested the hindrance of excessive profits and assurance of fair prices to the Government. A cost of food law, the third recommendation enabled the administration to a place sensible price floor that farmers may anticipate for their production and placed a price ceiling that consumers have to pay for their food. Fourthly, the early enactment of the stabilization statue of October 1942, as it was due to expire on June 30, 1944. According to Roosevelt if this was not enacted in due time the United States would be a risk of the inability to maintain the integrity of the American dollar. Lastly, the fifth recommendation for the Congress to adopt a national service law, which would have prevented strikes throughout the war and with certain proper expectation with readiness for the war production for necessary needed good and services. President Roosevelt saw the enactment of these recommendations as a necessity, along with the recommendation he suggest that there been a new Bill of Rights. An Economic Bill of Rights that encompassed the changes of the growing nation: "This Republic had its beginning and grew to its present strength, under the protection of certain inalienable political rights—among them the right of free speech, free press, free worship, trial by jury, freedom from unreasonable searches and seizures.

They were our rights to life and liberty." "As our nation has growing size and stature, however—as our industrial economy expanded—these political rights proved inadequate to assure us equality in the pursuit of happiness" (Dolbeare and Cummings, 419). The rights suggested by President Roosevelt spelled security and prosperity for the American people. Among these are as follows: "the right to useful and remunerative job in the industries or shops or farms or mine of the nation; the right of every farmer to raise and sell his products at a return which will give him and his family a decent living; the right of every business man, large and small to trade in an atmosphere of freedom from unfair competition and domination by monopolies at home or abroad; the right of every family to a decent home; the right to adequate medical care and the opportunity to achieve and enjoy good health; the right to adequate protection from the economic fears of old age, sickness, accident and unemployment; and the right to a good education" (Dolbeare and Cummings 419-420). The suggestion offered by President Roosevelt were presented during a time in which the United States was engaged in war and facing economic issues. This is similar to the state of the United States now. We are currently engaged in war and faced economic issues. The rights outline by President Roosevelt approximately sixty-five years ago is still very relevant in the American economy and in the lives of the American people today.

This brings about the questions of whether the United States would be facing another economic downturn had the Economic Bill of Rights been enacted. It is important for governmental official to go back and review this documentation, as it will provide value information and minimum guidance. Unfortunately, President Roosevelt did not outline how the rights should be enacted, which means there is still an opportunity for interpretation. Interpretation is exactly a good thing as the United States still faced the relevant problems outlined by President Roosevelt, but there are still new aspects. President Roosevelt laid the foundation; now the Economic Bill of Rights should be revisited and enacted. I believe the rights could contribute to the prevention and/or quicker recovery efforts for future economic downturns. "Faith in America, faith in our tradition or personal responsibility, faith in our institutions, and faith in our institutions, and faith in ourselves demands that we all recognize the new terms of the old social contract" (Remarks of Senator Barack Obama, 1). President Obama presented his economic plan to the nation during his presidential campaign by opening with a quote from President Roosevelt. The quote illustrates President Obama's comprehensive understanding of how the economy works as a whole. The president also realized that during the Great Depression, Americans flourish the more when all things work together interchangeably. In President Obama's address he identifies the consequences and lessons learned from individuals that continuously put their own personal gain ahead of the long-term gain and impact of the American economy.

The Consequences Identified Include: Nearly 2.5 million homeowners could lose their homes and millions others could see a tremendous decline in the value of their homes and the projected cost to investors is nearly $150 billion worldwide. Since President Obama address as the senator these numbers have not seen a decrease or a line of stability; the United States is considered to be in a Great Recession. President Obama states: "There are a number of lessons that we must learn from this on going forward. We know that much of this could have been avoided if the market operated with more honesty and accountability. We also know we would have been far better off if there were greater transparency and more information had been available to the American people" President Obama desire to create a sense of transparency in the government for the American people was critical in the passage of the Act. It is the understanding of President Obama that the utilization of the available technologies and methods must be used to open up the federal government and create a new level of transparency. A form of transparency that will change the way business is conducted in Washington and give Americans the chance to participant in government deliberations and decision making.

This was not possible a few years ago. Unfortunately, the honest and accountability of individuals is a difficult attribute to control. When dealing with money or an individual having to face extreme consequences an individual's character can change and honesty and accountability can easily be eliminated from one's character. President Obama utilizes these lessons learned to later assist with his efforts to the American Recovery and Reinvestment Act pushed through Congress. President Obama closes his address with the following quote, "Failure is not an American habit; and in the strength of great hope we must all shoulder our common load" (Remarks of Senator Barack Obama, 8). This too is a quote from President Franklin D. Roosevelt. President Obama sees this as the strength and hope the American government, businesses and people should seek today, and in all the days and months to come. This address illustrates the influential impact the works of President Franklin D. Roosevelt has had on the understanding of President Obama and the direction in which he plans to take action. Authors and Economists, Barry Eichengreen and Kevin H. O'Rourke conduct an analysis of the economy.

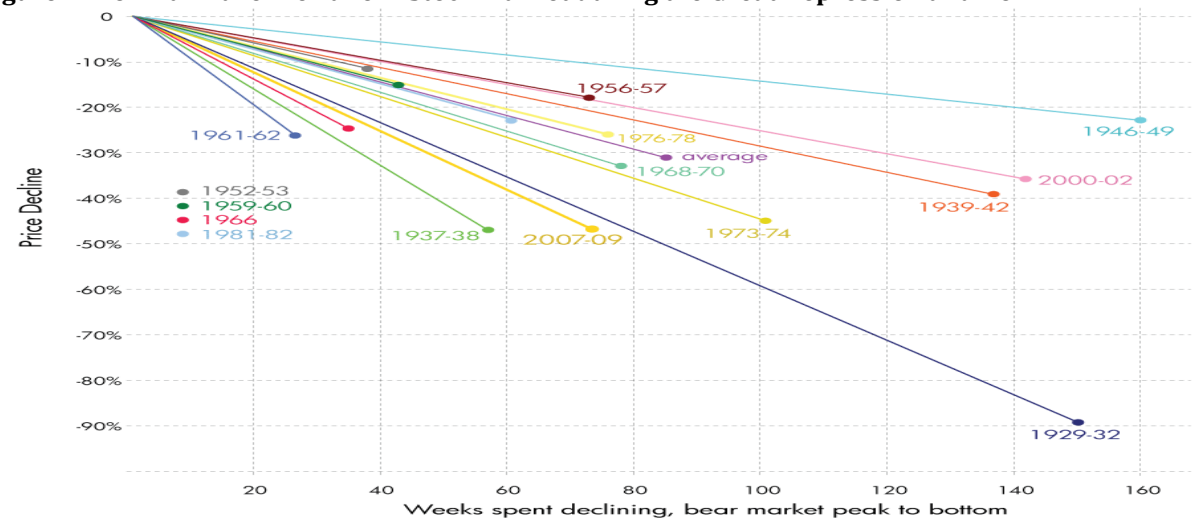
In the 1930s and the economy now. In their work entitled, "A Tale of Two Depressions," the authors' conduct and comparative analysis to determine the similarities and differences in the Great Depression and our current economic status. The authors' basic conclusion is that our current economic status is much more than simply a Great Recession, it is even being to surpass the Great Depression. The global economy is presently experiencing a negative disaster known as the COVID-19 that as big as the Great Depression shock of 1929-30. The request then was whether that policy measure will work. "The Great Depression was a global phenomenon. Even if it originated, in some sense, in the US, it was transmitted internationally by trade flows, capital flows and commodity prices. That said different countries were affected differently. The US is not representative of their experiences." "Our Great Recession is every bit as global, earlier hopes for decoupling in Asia and Europe notwithstanding. Increasingly there is awareness that events haven taken an even uglier turn outside the US, with even larger falls in manufacturing production, exports and equity prices" (Eichengreen and O'Rourke, 1).

3. Analysis

President Roosevelt was able to restore the economy of the United States with the implementation of the New Deal Programs. President Obama is now working toward restoring the failing United States economy once again with the implementation of the American Recovery and Reinvestment Act of 2009. The following statistical analysis will include statistical data collected regarding the similarities and difference in the economic downturn America faced in the 1930s and the downturn we are currently facing in the 21st century. As mentioned in 1929 America show a tremendous decline in spending, there was a drop in production, jobs were lost, bills went unpaid, and the market for produce reduced. The following photo is an illustration of the millions of unemployed individuals standing in line waiting for aid. Many have attempted to comment on the comparison of America then and America now, but according to the authors many have failed to realize that the Great Depression was a global economic downturn. The proceeding graphs and charts will provide comparative analysis on American during the Great Depression and America now.

The two photos above illustrate that many individuals are being heavily impact by the economic downturn now, as they once did during the Great Depression. The illustrates also establish an visual understanding and provide knowledge that the recession in not only affect one individual social class and/or gender, but is affecting the American people as a whole. The following graph depicts a comparison of the current market to all pervious bear markets. According to the graph the current United States market has not reached the lows of the 1929 market crash. However, between 1929 and 1932 the stock market had declined rapidly and continuously over a 150 week time period to -90% in pricing. The United States has not reached the -90% status, but has reached the half way mark at -50% pricing decline over a 76 week time period. Although we have not yet reached the decline experienced in 1929 it appears that our current decline is occurring over a shorten time span then before.

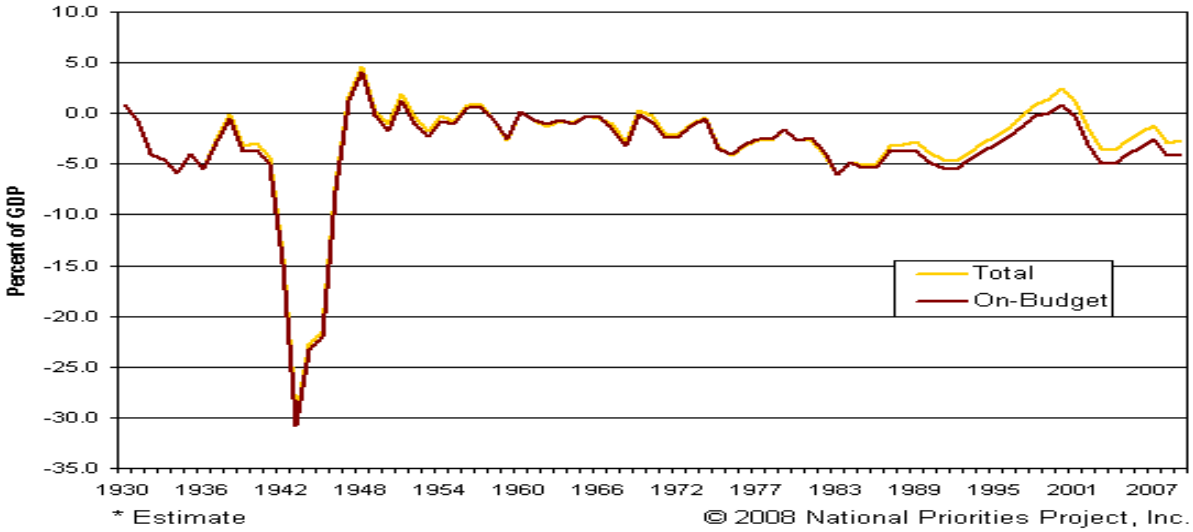
Figure 1: How Far Have We Fallen? Stock Market during the Great Depression and Now



Source: JP Konping Financial Graph & Art. www.financialgraphhart.com

Figure 2, the nation's inability to stay in line with the granted budget. We come close but there is still a defined different. During the Great Depression era the nation had a negative GDP percentage, which can be considered a contributing factor to the nation's economic downturn. Fortunately, the United States has not received that point in a tremendous amount as in 1942. The problem illustrated in the graph exceeding the granted budget for each fiscal year. The graph above identifies the impacts on the economy on the nations GDP between 1930 and 2009, the next graph illustrates the GDP once the American Recovery and Reinvestment Act of 2009 is implemented and effectively operating. The GDP of the United States is currently at Baseline level, but according to the predictions outlined in graph as the act is implement the GDP will reach it potential over a ten-year time span. Lastly, the following image exemplifies how the funding in the American Recovery and Reinvestment Act of 2009 will be allocated.

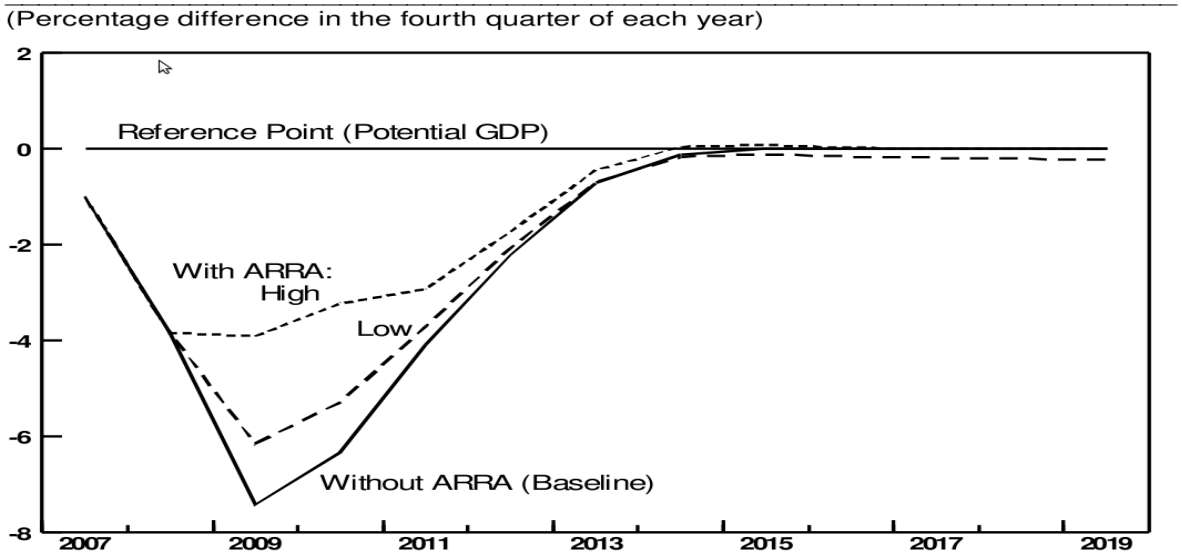
Figure 2: Total and On-Budget Deficits and Surpluses, 1930-2009



Source: Office of Management and Budget, Budget of the U.S. Government, FY2009, Historical Tables.

The initial tax relief comprised of $15 B for infrastructure and science, $61 B for protecting the general population, $25 B for education and training and $22 B for energy. The total funds were $126 B for Infrastructure and Science, $142 B for general population, $78 B for education and training, and $65 B for Energy. While state and local fiscal measures were cut and averted for health and education programs but an increase in state and local tax were implemented.

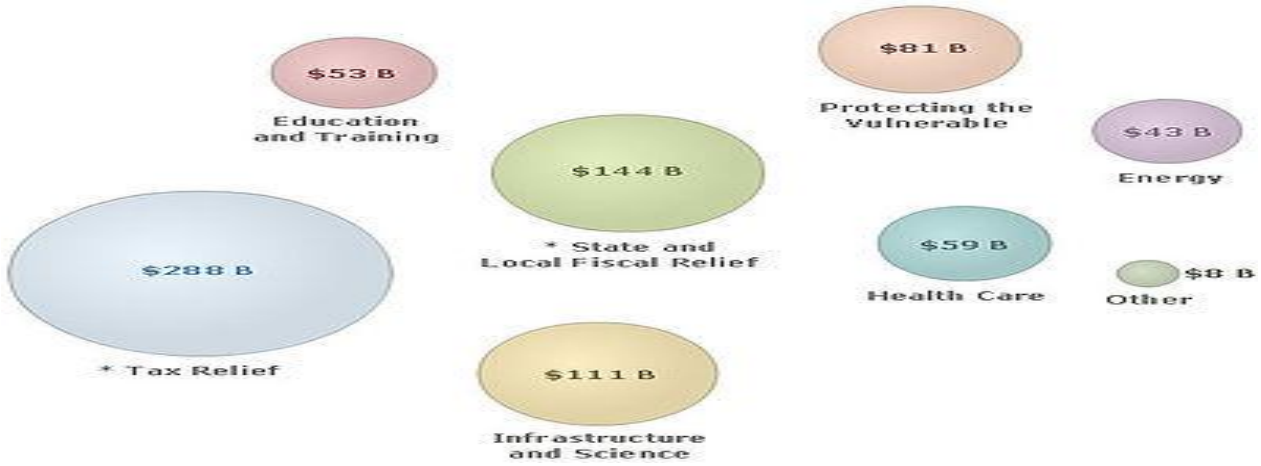
Figure 3: The Impact of the American Recovery and Reinvestment Act of 2009



Source: Congressional Budget Office 2009

According to the Act 37% of the stimulus bundle were dedicated to tax cuts equaling $288 billion and 18% of the package is devoted to state and locate fiscal relief equaling $144. The remaining 45% of the package were assigned to federal social and spending programs. For instances the allocations depicted above in the bubble diagram. Education and training was $53 billion, energy $43 billion, infrastructure and science $111 billion, health care $59 billion and protecting the population $81 billion. All of the allocations outlined are driving focuses that impact the economy and important issues to the American people.

Figure 4: Composition of the Funding Allocation under the American Recovery and Reinvestment Act, of 2009



Source: http://en.wikipedia.org/wiki/File:Investmentbubble.jpg

4. Conclusion

America is facing an economic disaster and is in need of federal relief to remain leading nation. Is America currently facing another Great Depression? The uncontainable depression later referred to as the Great Depression attacked the economy of the United States. In 2007 the United States began to take an economy downtown again. President Franklin D. Roosevelt implemented the New Deal Programs to recover the economic damage of the United States. President Barack Obama inherited a stressed economy from former President George W. Bush with a national debt of $10.627 trillion. As President Roosevelt once did, President Obama is now working toward a plan to recover the damaged United States economy. There are a number of lessons learned from President Roosevelt that should have been put into action long before the United States encountered another economic downturn. Although President Roosevelt's Economic Bill of Rights was not enacted into legislation, President Obama can utilize Roosevelt's experience as a foundation for address today's economic downturn. President Roosevelt was able to restore the economy of the United States with the implementation of the New Deal Programs. President Obama is now working toward restoring the failing United States economy once again with the implementation of the American Recovery and Reinvestment Act of 2009. The proceeding graphs and charts will provide comparative analysis on American during the Great Depression and America now.

5. Recommendations

Therefore, the following recommendations are proffered:

- First, just as President Obama and President Franklin D. Roosevelt, there must be an intervention and deployment of strong and active fiscal measures through the Act of congress to strengthen the American economy, businesses and people in the face of economic downturn.
- Second, this paper suggested that as in the New Deal programs, government must offer a way out of the economic crisis by provide relief with a broad program that involve a level of policy planning and coordination that was beyond the capacity of the Congress.
- Third, successive administration must have stimulus package of economic programs to relief unemployed individuals reform businesses and their financial practices and promote recovery during the economic depression.
- Finally, the elements of the Recovery Act that measured to be effective should be extended upon current programs and financing streams at the state and local levels for the implementation of the 2020 Stimulus.

References

American Recovery and Reinvestment Act of 2009. (2009). Wikipedia, 1-17.

The Great Depression, to 1935. (1935). 17 Apr. 2009 <http://www.fsmitha.com/h2/ch15wd.html>.

On the job front, still no Great Depression, but getting a little closer - The Curious Capitalist - TIME.com. The Curious Capitalist - TIME.com - Commentary on the economy, the markets and the strange ways of business. 5 Apr. 2009 <http://curiouscapitalist.blogs.time.com/2009/04/07/on-the-job>.

Organizing for America | BarackObama.com. 30 Mar. (2009). <http://www.barackobama.com/2007/09/17/remarks_of_senator>.

Patterson, T. E. (82). Federalism: Forging a Nation. The American Democracy. 6th Ed. New York: McGraw Hill, 2003. 81-83.

Pursuit of Happiness. (1939). TIME 16 Oct. 1939.

Roosevelt, President Franklin D. (1900-1945). The Rise of the Positive State: 1900-1945: An Economic Bill of Rights (11 January 1944). American Political Thought. Ed.

Kenneth, M., Dolbeare. & Michael, St. (2004). Clair Cummings. 5th ed. Washington, D.C: CQ P, 418-20.

The Roosevelt Week - TIME. Breaking News, Analysis, Politics, Blogs, News Photos, Video, Tech Reviews - TIME.com. 30 Mar. 2009 <http://www.time.com/time/magazine/article/0,9171,743953,00.html>.

Rothbard, M. N. (2000). America's Great Depression. 5th ed. Auburn: The Ludwig von Mises Institute, 2000.

The world economy is tracking or doing worse than during the Great Depression | vox - Research-based policy analysis and commentary from leading economists. (2009). Front Page | vox. 30 Mar. 2009 <http://www.voxeu.org/index.php?q=node/3421>.

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Determinants of Rural Household Food Consumption Expenditure in Lesotho: Impact of Off-farm Income

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Abstract: Most smallholder farmers in Sub-Saharan African need to diversify into nonfarm/off-farm income generating activities in order to ensure household food security through optimum consumption expenditure. The aim of this study was to investigate the effect of off-farm income on rural household food consumption expenditure in Lesotho, using secondary data from a comprehensive and representative Household Budget Survey of 2017. The survey design for data collection adopted a two stage stratified sampling procedure. The analysis used two econometric models. The OLS regressions were employed to identify important determinants of household food consumption expenditure and Instrumental Variable (IV) approach was employed to account for endogeneity issues. The results revealed a consistent positive and significant effect of off-farm income on household food consumption expenditure across all models. Household size, transfers and remittances were found to increase household food consumption expenditure significantly and positively. Government is advised to encourage and improve conditions under which rural smallholder farmers could participate in off-farm income generating activities.

Keywords: *Off-farm, rural households, food consumption expenditure, Lesotho.*

1. Introduction

Lesotho is a small landlocked mountainous country that is completely bordered by the Republic of South Africa. Three-quarters of the land is made up of rocky highlands and the remaining one-quarter are lowlands which are home to 55% of the population of about 2.2 million people. Only about 10% of the country's total land area is classified as arable, hence the agricultural sector accounts for about 17% of the GDP (National Institute of Statistics, 2015). In Lesotho, agriculture has been on the decline in recent years, despite being the major source of the rural people's livelihood. In a normal year the country produces 30% of the total food requirements and 60% of the annual cereal requirement has to be imported (World Bank, 2018). Therefore, in the face of the declining contribution of farming income to household welfare, most rural households engage in a variety of non-farm income generating activities to ensure, primarily, household food security. In the past, the major source of off-farm income has been remittances from mine workers in South Africa (Plath et al., 1987). Such remittances were expended on agricultural inputs, household assets and housing. However, remittances have declined steadily over the past years and mine workers repatriated to engage in farm and non-farm activities. So, the declining cereal and animal production, loss of non-farm income from remittances and reduced employment have reduced the purchasing power of the rural residents.

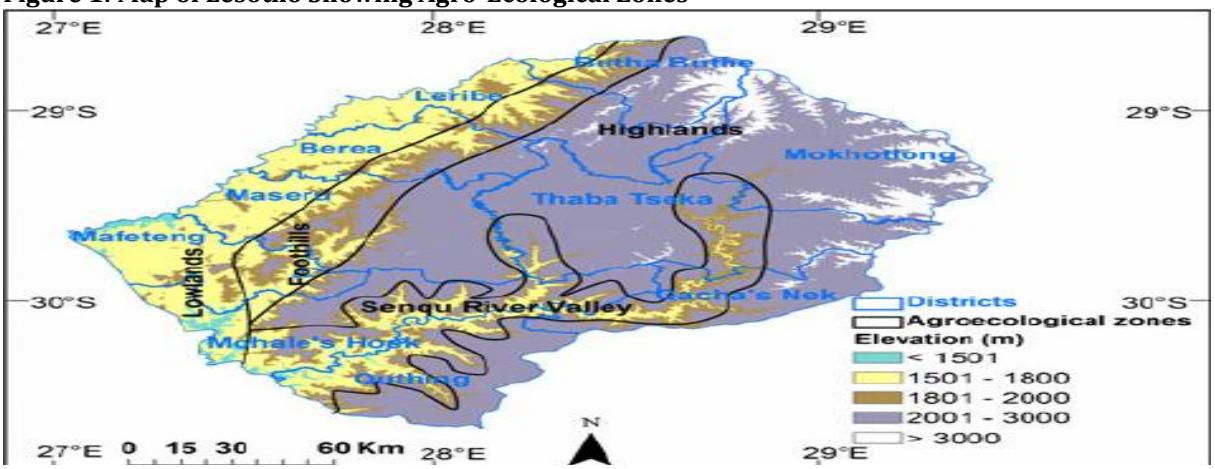
This has been further exacerbated by higher prices of imported food and agricultural inputs which have increased poverty and household food insecurity. In Sub-Saharan Africa, very few rural households derive their entire income from agriculture. Most of them diversify into non-farm livelihoods as a survival strategy in order to maintain improved household welfare (Ellis, 1999). Ellis (1998, 1999, 2000) posits that income generated from off-farm activities play a major role in poverty alleviation as it smooth rural household income and consequently improves food security among rural dwellers. Recent studies have focused on the increasing engagement of rural dwellers in non-farm activities. In Sub-Saharan Africa, a range of 30% - 50% reliance on non-farm income sources is common, but it could attain 80% - 90% in South Africa (OECD/FAO, 2018). Babatunde & Qaim (2010) found that in Nigeria, 65% of smallholder farmers' households participated in off-farm activities realizing at least 50% of their total income therefrom. Similarly, Idowu et al. (2011) found that off-farm income accounted for 67.1% of total rural household income in some parts of Nigeria. Mishra et al. (2015) found that off-farm business income contributes 30% of total household income in rural Bangladesh. Furthermore, they noted that rural dwellers engage in off-farm business in order to stabilize their income and ensure food security.

In Ghana, the importance of non-farm/off-farm income on household food expenditure has been highlighted by Owusu et al. (2011) and Osarfo et al. (2016). Seng (2015) confirmed through a study in Cambodia that income from off-farm activities increases household food consumption. Few studies have highlighted the role of non-farm sector in Lesotho but none has specifically studied the effect of off-farm income on food consumption expenditure (Rantšo, 2016; Rantšo & Seboka, 2019). Such a specific study is germane, more so with the declining income from agriculture and rising cost of household food consumption. This study therefore investigates the effects of off-farm income on rural household food consumption expenditure in Lesotho. The main off-farm income activities in Lesotho include casual labor on others' farms, sales of fuel wood, hay, cow dung, chicken manure, among others. Our results contribute to the literature that documents the effect of off-farm income on household food expenditure of rural farming households. A better understanding of this relationship can help inform the discussion on appropriate policies that will further improve rural household welfare in Lesotho.

2. Methodology

Data Source and Collection: Data for this study is obtained from the 2017 Household Budget Survey in Lesotho. It is a nation-wide survey conducted by Bureau of Statistics (BOS) in Lesotho. The purpose of the survey was to enrich the System of National Accounts (SNA) in terms of household consumption expenditure and income. The data was collected through multi-purpose questionnaires encompassing aspects on demography, education, economic activities, agriculture, health, food expenditure and consumption. The data is comprehensive and covers the 4 diverse ecological zones in Lesotho (Lowlands, Foothills, Mountains and Senqu River Valley. See Figure 1). According to Household Budget Survey (2017) Report, a two stage stratified sampling procedure was employed in the survey design. The enumerated areas (EAs) in the districts made up the primary sampling units (PSUs) while households within the districts comprised the secondary sampling units (SSUs). Districts were also subdivided in two strata constituted of urban and rural residences. A cluster of two or more EAs formed a PSU in rural areas whereas in urban areas, a single segment of an EA was used as a PSU. A list of households was compiled for each village within the study area. A random sampling technique was used to select both male and female-headed households from which data were collected. Therefore, the study uses secondary data for 2825 rural households in Lesotho.

Figure 1: Map of Lesotho Showing Agro-Ecological Zones



Source: National Institute of Statistics (2015)

Empirical Model and Variables: There is an established positive correlation between off-farm participation and household food consumption expenditure. This study used the Sustainable Livelihood Framework (SLF) for the empirical model and variables selection in the regression analysis. Based on the framework, the following empirical model was employed to estimate the effect of off-farm participation on household food consumption expenditure:

$$hh\exp_i = f(offinc, hhgen, hhage, hhedu, hhsize, child5, child14, zone, hhtrans) \ldots\ldots\ldots\ldots\ldots\ldots (1)$$

Where $hh\exp_i$ is the household food consumption expenditure in Maloti (M). It is food expenditure given as the amount of money allocated to food purchased within the household over a period of 30 days. $offinc$ is the household off-farm income from off-farm activities.

Most of the off-farm activities include casual labor on others' farms, sales of fuel wood, hay, cow dung, chicken manure, among others. $hhgen$ depicts the gender of the household head. It is a binary variable which takes the value of 1 for male headed households and 0 otherwise. $hhage$ is a categorical variable for the household heads age groups, and has four categories (15-29, 30-44, 45-59, 60+). $hhedu$ captures the educational attainment of household heads which is classified into None (no formal education), Primary, Secondary, Non-graduates and Graduates. $hhsize$ refers to the total number of persons living permanently within the household. $child5$ represents children below 5 years old, and $child14$ represents children between 5 and 14 years old. Children below the age 5 years may not usually form part of the household labor supply but require attention in terms of care and diet. They may influence the decision of the household in participating in off-farm activities and also types of food purchased, hence food expenditure. Concerning children between 5 and 14 years, they usually require expenses in terms of school requirements such as school fees, uniform, stationery, etc., which add to the household expenses. $zone$ is a categorical variable capturing the 4 ecological zones in Lesotho (1=Lowlands, 2=Foothills, 3=Mountains and 4=Senqu River Valley). $hhtrans$ are cash transfers from within the country or remittances from abroad the household received within the past 30 days.

Estimation Procedure and Validation Techniques: Multiple regression analyses are widely employed in econometrics, and follow the OLS assumptions. Equation (1) is estimated using the OLS technique to determine the effect of off-farm income on household food consumption expenditure among other factors. However, OLS may not address the issues of endogeneity which arises when household food consumption expenditure is jointly determined with one of the dependent variable (household off-farm income) included in the analysis. Therefore, the OLS estimates would be biased and inconsistent. We address this issue by employing Instrumental Variable (IV) estimation technique. However, the main challenge of the IV approach lies in the identification of a suitable instrument within the dataset which satisfies the exclusion restriction. Taking into consideration this challenge and the inability of obtaining suitable instruments for this study, we employed an identification method proposed by Lewbel (2012). The method utilizes a heteroscedastic covariance restriction to construct an internal IV that can be employed to obtain estimates of household off-farm income. The approach rests on certain assumptions, but the only non-standard assumption is that there is heteroscedasticity in ξ_j, which can be tested using the Breusch and Pagan test.

The model is specified as follows:

$$Y_1 = X_i\beta_1 + Y_2\gamma_i + \xi_1 \qquad \xi_1 = \alpha_1 U + V_1 \qquad (2)$$

$$Y_2 = X_i\beta_2 + \xi_2 \qquad \xi_2 = \alpha_2 U + V_2 \qquad (3)$$

Where Y_1 is household consumption expenditure, Y_2 is household off-farm income, X_i are exogenous explanatory variables, U is the observed ability, V_1 and V_2 are idiosyncratic errors. Lewbel (2012) suggests that one can take a vector Z of observed exogenous variables and use $[Z - E(Z)]\xi_2$ as an instrument if:

$$E(X\xi_1) = 0,\ E(X\xi_2) = 0,\ \text{cov}(Z, \xi_1, \xi_2) = 0 \qquad (4)$$

There is some heteroscedasticity in ξj. According to Mishra & Smyth (2015) the rationale for employing $[Z - E(Z)]\xi_2$ as an instrument is that identification is realized by having regressors that are not correlated with the product of the heteroscedastic errors. Z could either be a subset of X or equal to X. Using the instrument specified above, we apply the 2SLS in our regression analysis to estimate the IV coefficients. The analysis follows the same approach as the case with conventional IVs.

3. Results and Discussion

Socio-Economic Characteristics of the Households: Table 1 presents the descriptive statistics for socio-economic variables of households participating in off-farm activities in rural areas in Lesotho.

Table 1: Descriptive Statistics

Variable	Description	Obs (%)	Mean	SD	Min	Max
Y_i	Food consumption expenditure	1,842	1835.3	1640.5	104.5	17609.1
Offinc	Household off-farm Income	1,688	2019.5	2746.3	60	17833.3
Hhtrans	Transfers and remittances	755	595.9	839.8	50	8083.3
Hhgen	**Gender of household head**					
	male	1,202 (65.1)	0.651	.477	0	1
	female	644 (34.9)	0.348	0.477	0	1
hhage	**Age of household head**					
	15-29	116 (6.3)	0.063	0.243	0	1
	30-44	644 (34.9)	0.349	0.477	0	1
	45-59	736 (39.9)	0.399	0.489	0	1
	60+	350 (18.9)	0.189	0.392	0	1
hhedu	**Educational attainment of household head**					
	None	347 (18.9)	0.188	0.391	0	1
	Primary	1,119 (60.3)	0.606	0.489	0	1
	Secondary	326 (17.8)	0.176	0.381	0	1
	Graduates	36 (2.0)	0.019	0.138	0	1
	Non graduates and others	18 (1.0)	0.009	0.098	0	1
hhsize	Total number of household members	1,835	4.570	2.402	1	12
child5	Number of children 5 years and below	1,846	0.586	0.779	0	4
child14	Children between 5 and 14 years	1,843	1.616	1.448	0	7
zone	**Ecological zones in Lesotho**					
	Lowlands	827 (44.8)	0.448	0.497	0	1
	Foothills	212 (11.5)	0.115	0.319	0	1
	Mountains	559 (30.3)	0.303	0.459	0	1
	Senqu River Valley	248 (13.4)	0.134	0.341	0	1

The statistics show that the average off-farm income received by a household participating in off-farm activities is around M 2019.5 within a period of 30 days, whereas the average household food consumption expenditure is M 1835.3. Households receive on average M595.9 as transfers and remittances from abroad. Most of the households are male-headed (65.1%) with a majority of the household heads having completed primary education (60.3%). Concerning the age group, most of the household heads are between the ages of 30 – 64. In other words, farmers are mature and should be able to make rational decisions about the off-farm activities to be involved in. The low percentage of the younger age group can be linked to the fact that most of the educated youths have higher mobility out of the rural areas (where agriculture is the main activity) to seek for employment in urban areas.

Concerning the older age group (65+), as household heads grow older, it is expected that the probability of participation in the off-farm activities decreases, because productivity decreases with increasing age. Most of the rural households participating in off-farm activities are in the lowlands (44.8%). According to Silici (2010), lowlands in Lesotho have higher sales of agricultural products than any other zone. Therefore, the zone variable will possibly affect off-farm participation especially for households that obtain lower incomes from agricultural activities. On the average, there are 4 persons per household, with most families not having children of less than 5 years old. For children aged between 5 and 14, there are, on average 2 children per household. This implies that most of the households have at least one member between the ages 5 and 14.

The Determinants of Household Food Consumption Expenditure: To analyse the determinants of households' food consumption expenditure in Lesotho, the heteroscedasticity-based instrumental variable approach was employed in order to address endogeneity issues in the variables. For the econometric analysis, we first estimated the OLS regression, while disregarding endogeneity problem. Next we estimated the IV regression to account for possible endogeneity. The results from the regression analysis are reported in Table 2 while the results of the first stage IV regression are presented in the appendix. The first stage IV results confirm the relevance of the heteroscedasticity-based instrumental approach in this study. The application of the heteroscedasticity-based instrumental approach does not rest on certain assumptions like the standard 2SLS model.

The only non-standard assumption for the application of the model is that there should be no heteroscedasticity. This assumption was verified using the Breusch-Pagan test. It tests the null hypothesis that the variances of the error terms are constant (homoscedasticity) against the alternative hypothesis that the variances are none constant (heteroscedasticity). The results of the Breusch-Pagan test for both models are not significant. This implies that we accept the null hypothesis of homoscedasticity. The results in Table 2 show that there is a consistent positive effect of off-farm income on household food consumption expenditure. The OLS estimates indicate that a 1% increase in household off-farm income, ceteris paribus, will increase household food consumption expenditure by 11.2%. However, as these estimates suffer from endogeneity bias, the coefficients estimated from the 2SLS (IV) model offer a more accurate prediction. As evident in Table 2, a 1% increase in off-farm income leads to a 22.7% increase in the household food consumption expenditure.

These findings agree with those of Jacobson et al. (2010) and Mishra et al. (2015). The results further indicate that transfers and remittances positively and significantly increase household food consumption expenditure. Using the IV estimates, a 1% increase in the transferred amounts received by household has a 3.2% increase in food expenditure. This can be explained using the concept of rural-urban migration (Wang et al., 2000). In this case, migration of young people from rural households to the cities or abroad has been identified as a survival strategy for the household. Remittances from the migrating youths form a significant part of the food consumption expenditure of the rural households left behind. Households that receive these remittances tend to use the proceeds primarily for current consumption (food, clothing) as well as investments in children's education, health care, improvement in household food and security, and water and sanitation (Ajaero & Onokala, 2013).

Table 2: OLS and IV Estimates

Variable	OLS Regression	IV Regression
Log off-farm income	0.112***	-
	(0.021)	-
Instrument for off-farm income (*y2hat*)	-	0.227***
	-	(0.322)
Log of transfers and remittances	0.066**	0.032***
	(0.026)	(0.082)
Household size	0.188***	0.174**
	(0.018)	(0.069)
Infants less than 5 years	0.045*	0.035*
	(0.041)	(0.042)
Children between 5 and 14 years	0.130***	0.110
	(0.031)	(0.081)
Gender of Household Head		
Male	0.099*	0.065**
	(0.058)	(0.120)
Age (Group) of household head		
30 - 44	0.100	0.139
	(0.137)	(0.150)
45 - 59	-0.048	0.019
	(0.139)	(0.133)

60+	0.174**	0.105*
	(0.145)	(0.142)
Educational Attainment of Household head		
None	0.057*	0.020**
	(0.078)	(0.143)
Primary	0.044	-0.044
	(0.103)	(0.289)
Graduates	-0.212	-0.019*
	(0.266)	(0.625)
Non Graduates and others	-0.335	-0.481
	(0.240)	(0.663)
Ecological zone		
Foothill	-0.014	-0.024
	(0.088)	(0.085)
Mountains	-0.051	0.041*
	(0.066)	(0.074)
Senqu River Valley	-0.057	-0.045
	(0.078)	(0.057)
Constant	5.456***	4.886***
	(0.238)	(1.290)
Observations	677	742
Breusch-Pagan test		
chi2	0.27	0.66
Prob>chi2	0.605	0.750

Note: ***, **, and * denote a 1%, 5% and 10% level of significance, respectively.

Concerning household size, the positive and significant relationships indicate that household size critically affects the amount of money required for household food consumption expenditure. This implies that as household size increases by one member, the household food consumption expenditure increases by M17.4, ceteris paribus. This can be explained by the fact that most rural households depend on subsistence farming, and any addition of a member in the household will constrain the limited resources. Similar results were reported by Gazuma (2018) and Mitiku et al. (2012). In addition, households with large family sizes, having children of non-productive ages could increase the food consumption expenditure because of high dependency ratio than households with small family sizes (Beyene & Muche, 2010). Furthermore, socio-economic and demographic factors such as; no formal educated household heads, male-headed households, being above 65 years old and living in mountainous areas, are also important determinants of household food consumption expenditure in Lesotho. These variables increase the household food consumption expenditure. These findings are consistent with those of Akpan (2013) and Paul et al. (2014).

4. Conclusion and Policy Implications

This study investigated the effects of off-farm income on rural household food consumption expenditure in Lesotho among other determinants. Using a comprehensive and representative Household Budget Survey of 2017, we employed two econometric models in the regression analysis. First, the OLS regressions were employed to identify important determinants of household food consumption expenditure while disregarding the endogeneity issue. Second, the Instrumental Variable (IV) method (heteroscedasticity-based instrument) was applied out to account for endogeneity issues. Our empirical results reveal the following: First, off-farm income had a positive and significant effect on household food consumption expenditure across all models. The effect was higher when we controlled for the endogeneity issues in the model. These results were consistent with previous studies. Second, the results also indicated that transfers and remittances positively and significantly increased household food consumption expenditure.

Third, households that are male-headed and earn off-farm income tend to have higher food consumption expenditures. Lastly, socio-economic factors such as household size, household heads without formal education, being above 65 years old and living in mountainous areas, are also important determinants of

household food consumption expenditure. Based on the findings of this study, the following recommendations are suggested. Rural households who are mostly engaged in smallholder farming should diversify into off-farm activities in order to earn extra income for improvement of household food consumption expenditure. To reduce rural poverty, government policies should aim at encouraging off-farm activities, especially value addition to crops, and training on farm related income generating activities. This will further improve rural household income and subsequently, household welfare.

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References

Ajaero, C. K. & Onokala, P. C. (2013). The Effects of Rural-Urban Migration on Rural Communities of Southeastern Nigeria. International Journal of Population Research.

Akpan, S. (2013). Determinants of Food Consumption Expenditure among Agro-Based Firms Workers in Southern Nigeria: Simultaneous Equation Approach. Asian Journal of Agricultural Extension, Economics & Sociology, 69-84.

Babatunde, R. O. & Qaim, M. (2010). Impact of off-farm income on food security and nutrition in Nigeria. *Food Policy*, 35(4), 303-311.

Beyene, F. & Muche, M. (2010). Determinants of food security among rural households of Central Ethiopia: An empirical analysis. *Quarterly Journal of International Agriculture*, 49(892-2016-65219), 299-318.

Ellis, F. (1998). Household strategies and rural livelihood diversification. *Journal of Development Studies*, 35(1), 1-38.

Ellis, F. (1999). Rural Livelihood Diversity in Developing Countries: Evidence and Policy Implications. *Overseas Development Institute, London*, 40(1), 1-10.

Ellis, F. (2000). The determinants of rural livelihood diversification in developing countries. *Journal of Agricultural Economics*, 51(2), 289-302.

Gazuma, E. G. (2018). An Empirical Examination of the Determinants of Food Insecurity among Rural Farm Households: Evidence from Kindo Didaye District of Southern Ethiopia. *Business and Economics Journal*, 9(345), 2.

Idowu, A. O., Awoyemi, T. T., Omonona, B. T. & Falusi, A. O. (2011). Non-farm income diversification and poverty among rural farm households in southwest Nigeria. European Journal of Social Sciences.

Jacobson, D., Mavrikiou, P. M. & Minas, C. (2010). Household size, income and expenditure on food: The case of Cyprus. *Journal of Socio-Economics*, 39(2), 319-328.

Lewbel, A. (2012). Using heteroscedasticity to identify and estimate mismeasured and endogenous regressor models. *Journal of Business and Economic Statistics*, 30(1), 67-80.

Mishra, A. K., Mottaleb, K. A. & Mohanty, S. (2015). Impact of off-farm income on food expenditures in rural Bangladesh: An unconditional quantile regression approach. *Agricultural Economics (United Kingdom)*, 46(2), 139-148.

Mishra, V. & Smyth, R. (2015). Estimating returns to schooling in urban China using conventional and heteroskedasticity-based instruments. *Economic Modelling*, 46, 166-173.

Mitiku, A., Fufa, B. & Tadese, B. (2012). Emperical analysis of the determinants of rural households food security in Southern Ethiopia: The case of Shashemene District. In *Basic Research Journal of Agricultural Science and Review*, 1(6), 132-8.

National Institute of Statistics, Directorate General for Health, & ICF International. (2015). Lesotho Demographic and health survey 2014. In Lesotho Ministry of Health.

OECD/FAO. (2018). Agriculture in Sub-Saharan Africa: Prospects and Challenges for the Next Decade, OECD-FAO Agricultural Outlook 2016-2025. In OECD Publishing.

Osarfo, D., Senadza, B. & Nketiah-Amponsah, E. (2016). The Impact of Nonfarm Activities on Rural Farm

Household Income and Food Security in the Upper East and Upper West Regions of Ghana. Theoretical Economics Letters.
Owusu, V., Abdulai, A. & Abdul-Rahman, S. (2011). Non-farm work and food security among farm households in Northern Ghana. Food Policy.
Paul, K. N., Hamdiyah, A. & Samuel, A. D. (2014). Food expenditure and household welfare in Ghana. African Journal of Food Science.
Plath, J. C., Holland, D. W. & Carvalho, J. W. (1987). Labor migration in Southern Africa and agricultural development: some lessons from Lesotho. Journal of Developing Areas, 159-176.
Rantšo, T. A. (2016). The role of the non-farm sector in rural development in Lesotho. In Journal of Modern African Studies.
Rantšo, T. A. & Seboka, M. (2019). Agriculture and food security in Lesotho: Government sponsored block farming programme in the Berea, Leribe and Maseru Districts. Cogent Food & Agriculture.
Silici, L. (2010). Conservation agriculture and sustainable crop intensification in Lesotho. Integrated Crop Management.
Wang, T., Maruyama, A. & Kikuchi, M. (2000). Rural-urban migration and labor markets in China: A case study in a Northeastern province. Developing Economies.
World Bank. (2018). Climate-Smart Agriculture in Lesotho. CSA Country Profiles for Africa Series.

Appendix: First Stage Estimates of 2SLS: After performing the IV estimates (using a 2SLS), the table below shows the first stage estimates of the 2SLS. The results on the table confirm the relevance of the heteroscedasticity-based instrumental approach in this study.

Variable	OLS Regression
Log of transfers and remittances	0.238***
	(0.048)
Household size	0.210***
	(0.033)
Infants less than 5 years	-0.030
	(0.077)
Children between 5 and 14 years	-0.227***
	(0.058)
Gender of Household Head	
Male	0.323***
	(0.108)
Age (Group) of household head	
30 - 44	0.194
	(0.257)
45 – 59	0.008
	(0.260)
60+	-0.130
	(0.271)
Educational Attainment of Household head	
None	0.352**
	(0.146)
Primary	0.793***
	(0.191)
Graduates	1.729***
	(0.493)
Non Graduates and others	1.868***
	(0.443)
Ecological zone	

Foothill	-0.091
	(0.164)
Mountains	-0.202*
	(0.123)
Senqu River Valley	-0.240
	(0.146)
Constant	4.094***
	(0.416)
Breusch-Pagan	
Chi2(11)	7.66
Prob>chi2	0.006

Note: ***, **, and * denote a 1%, 5% and 10% level of significance, respectively.

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The Multiple Meanings of Jatio Sangsad Bhaban

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Abstract: Jatio Sangsad Bhaban, the National Assembly Building of Bangladesh, is an iconic building and architectural landmark designed by American architect Louis I. Kahn. Jatio Sangsad Bhaban was constructed between 1962 and 1983 and is located in the heart of Dhaka, the nation's capital. The extant literature on Louis I. Kahn's work suggests that Jatio Sangsad Bhaban is a significant architectural masterpiece. One of its most notable features is its architectonic quality, providing it with the grandeur of a modern monumental building. In this context, this paper aims to examine the underlying multiple meanings, that is, socio-political, cultural, historic and philosophical meanings of the Jatio Sangsad Bhaban building By constructing and summarising meanings, rather than exploring the physical building itself, this paper supports the notion of multidimensional perspectives of monumental architecture. The multiple meanings of iconic architecture through the lens of societal issues have been endorsed by many architectural critics. Accordingly, this paper considers the cultural, political, ethical and historical meanings of Jatio Sangsad Bhaban. Revealing and summarising other aspects apart from its architectonic dimensions is a new approach to understanding a widely acclaimed iconic building like Jatio Sangsad Bhaban.

Keywords: *Jatio Sangsad Bhaban, National Assembly Building, Louis. I Kahn, Responsive Meaning, Dhaka.*

1. Introduction

Jatio Sangsad Bhaban is the National Assembly Building in Bangladesh. It is an iconic building occupying an area of approximately 610 acres of land in the heart of Dhaka.[i] Commissioned by Ayub Khan, the military dictator and then president of Pakistan, it is regarded as one of the most important buildings designed during the life of the globally recognised architect Louis I. Kahn (Choudhury and Bell, 2011). Louis I. Kahn was commissioned for the project in 1962 and continued the design until his death in 1974. The project was completed in 1983 and is located in the heart of the city in an area now called Shere-Bangla-Nagar. This land was originally flat farmland on the northern outskirts of the old city of Dhaka (Choudhury and Bell, 2011). The total complex is comprised of the Citadel of Assembly and the Citadel of Institution. The Citadel of Assembly consists of the main assembly building plus the housing for Members of Parliament. The assembly building remains the focus of the complex, which is surrounded by built form, open spaces, a lake, garden and parks. To the south of the assembly building is a public plaza, and to the north the Presidential Plaza (Ashraf, 1994). While the building is acclaimed worldwide, its inner essence as an edifice transcends its artistic, functional, and structural role. The broader meanings of monumental buildings incorporate issues like power, control, politics, ethics and other critical issues. According to Stea (1993), architecture should be perceived beyond its physical and aesthetic entity and should incorporate a wider picture.

Vale argues that grand symbolic buildings like Jatio Sangsad Bhaban need to be understood from their political and cultural aspects: "Grand symbolic state buildings need to be understood in terms of the political and cultural contexts that helped to bring them into being" (2008, p. 3). This paper attempts to construct, reconstruct and summarise the cultural, socio- political, historic, moral, and ethical meanings attributed to this building from various published sources in relation to this symbolic building. Cultural aspects include its symbolic presence reflecting the democracy of independent Bangladesh, and the dramatic representation of the rural landscape and deltaic plain through its modern articulation of form and surroundings. The building also reflects Mughal built heritage through its geometrical articulation. The political meaning revolve around its appearance as an entity of West Pakistan President Ayub Khan's autocratic subject, which in through twists and turns became the symbol of nationalist elements for independent Bangladesh. The political meaning also hinges around the commissioning of JSB and its connection to the cold war politics. The historic meaning of JSB refutes the claim of its American imperialist connection and instead provides an insight that connects its position as more of a British Colonial urban planning imprint. The work also sheds a new light regarding commissioning of local architect Muzharul Islam as a precursor of the lead architect Louis Kahn.

Finally, in revealing multiple subjective meaning of JSB, the paper draws upon sources. Superior prudence denotes complete selflessness; prudence, a combination of selflessness and self-interest; and imprudence a complete interest in issues.

2. Multiple Meanings of Architecture

The existence of multiple dimensions in architecture is widely recognised in the contemporary architecture discourse. Where architect Louis Kahn's and client General Ayub Khan's role was scrutinised regarding ethical concerns of the project. Revealing all these critical aspects of JSB is a central theme of this paper. It is well accepted that multiple meanings transcend the conventional idea of architecture as a mere structure (Whyte, 2006). Diverse meanings not only represent architecture with symbolism but also a connection with the larger landscape of the social fabric and social milieu (Upton, 2002). Goodman writes: "A building, more than most works, alters our environment physically; but moreover, as a work of art it may, through various avenues of meaning, inform and recognise our entire experience. Like other works of art — and like scientific theories, too — it can give new insight, advance understanding, participate in our continual remaking of a world" (Goodman, 1985, p. 652). In this setting, the various meanings of Jatio Sangsad Bhaban apart from its architectonic meaning, provide new insights and perceptions, and expose its multi-dimensional symbolic nature. For Dunougho, "Architecture exhibits wealth of symbol" (Donougho, 1987). Similarly, Whyte discusses the ways in which architecture conveys social, intellectual, and political meaning through symbolic expression (2006).

The multiple meanings of architecture are revealed 'in the eye' and emotional response or feelings of the beholder. Davis (1999) argues that depending on individual characteristics and views of the critic, the building unfolds itself; the experience of the beholder is inextricably connected to his or her strong feelings for the building from a social standpoint (Davis, 1999). Alexander et al. (1977) discusses this connection to feeling, saying that the core of architecture is feeling diverse understandings. An individual's societal understanding about architecture differs from person to person and from context to context (Alexander et al., 1977). For Shawcroft (1960), the potential evocative feeling depends upon the observer — an architect may respond in one way, a historian in another way (Shawcroft, 1960). He states, "with-out this power or quality to evoke feeling, a work of architecture is a mere image on the retina of the eye" (Shawcroft, 1960, p. 10). In his seminal article 'Architecture and Meaning', Hershberger (1970) delineated various theories of architectural meaning revolving around perspectives of the 'representational' and 'responsive'. The following sections will discuss different subjective meanings of Jatio Sangsad Bhaban in order to reveal the multiple socio-political meanings attributed to it.

3. Multiple Meanings of Jatio Sangsad Bhaban

The multiple meaning of JSB including a range of cultural, political, historical, and ethical issues reflect a diversity of human aspects surrounding this iconic structure from different views and perspectives. Two key individuals (the client Ayub khan and architect Louis I Kahn), the passing generation of Bengal people, key global player of politics such as the United States of America are inextricably associated with this iconic piece of architecture as an agent of society. An association of all cross sections of people and institutions have enriched and glorified the multiple socio-political meanings now embedded in JSB. Gieryn (2002) asserts "to some degree, every design (Architecture) is a blueprint for human behaviour and social structure" (Gieryn, 2002, p. 42). The discussion in this paper about the cultural, political, historical, moral, and ethical meanings of Jatio Sangsad Bhaban resonates with Gieryn's idea. This paper in its examination of the alternative meanings of this important building reinforces Blendell and Till's (2005) claim that "Architecture needs to be understood within a broader framework than the surface of image, both in terms of engaging with context and in terms of engaging with all the senses, through time and experience of use" (Blendell et al., 2005, p. xv).

The Cultural Meaning of Jatio Sangsad Bhaban: In order to establish the connection between architecture and culture, Lang et al. (1997) described architecture as the carrier of symbolic messages about one's nationality and culture. Gordon and Osborne (2004) argue that monuments are vehicles in symbolic expression of national values, culture and identities (Gordon and Osborne, 2004). For Goldberger (2009), "architecture is the ultimate physical representation of a culture, more so than even its flag" (Goldberger,

2009, p. 16). Davis (1999) draws the connection between architecture and culture, asserting, "On the one hand, building exists as stand-alone artefacts, and on the other, they are artefacts that express the deep meaning, aspirations, and social order of a culture" (Davis, 1999, p. 95). The cultural meaning of Jatio Sangsad Bhaban mainly revolves around its value as a symbol of national identity for the people of Bangladesh. Jatio Sangsad Bhaban is an expression of national pride and national sentiment that unifies the people of Bangladesh (Choudhury and Armstrong, 2012). In its most basic form, it demonstrates the democratic culture of the Bengal people through its everlasting presence (Ksiazek, 1993). Apart from its metaphysical symbolic value of representing culture, Jatio Sangsad Bhaban resonates with the rural culture of Bengal though its physical manifestation of form and space.

Bangladesh is a deltaic plain curved out from a rich fusion between land and water. Its vast flat land with free-flowing rivers and canals provide a unique setting for architecture. Commonly found rural huts, which are at the core of Bengal rural culture, reconfigure the already rich mosaic of the Bengal landscape (Choudhury and Armstrong, 2012). Ashraf writes, "Architecture is inherently a landscape event" (Ashraf, 2007, p. 48). Architect Louis I. Kahn consciously incorporated the richness of the rural setting in Jatio Sangsad Bhaban as its essential form represents the rural hut while the landscape, incorporating an artificial lake, represents the Bengal delta. Kahn wrote, "I've chosen to distinguish [the national Assembly] from its surroundings by the introduction of a lake.

Because it's a delta country, and all important buildings [especially rural huts] are on mounds" (Ksiazek, 1993, p. 432). The deep rooted cultural articulation of this region, especially the geometry of the Mughal garden, has been reflected through the landscape of Jatio Sangsad Bhaban. The octagonal form and layering of building envelopes are reminiscent of a traditional Mughal approach to public buildings in the region[ii] (Ksiazek, 1993, p. 432). The brick structure of the subsidiary surrounding buildings resonates and reverberates with the traditional terracotta and brick structures of the region. Kahn consciously translated the traditional building culture of this region into a Western vocabulary in the creation of the Jatio Sangsad Bhaban (Ksiazek, 1993). As such, Jatio Sangsad Bhaban can be perceived as a physical representation of Bangladeshi and regional culture, identity and way of life.

The Political Meaning of Jatio Sangsad Bhaban: Jatio Sangsad Bhaban is a highly politically charged masterpiece with local politics playing a crucial part in its creation (Choudhury and Bell, 2011). The pervasive role of politics over architecture has been widely recognized in the literature. Hurst (2005) asserts that architecture should be understood from an all-encompassing perspective, incorporating 'power' and 'social significance' (Hurst, 2005). Others such as Vale (2008) visualized that, in general, all significant architectural commissions evolved from political underpinnings (Vale, 2008). Findley's idea (2005) reinforced this standpoint, as he asserts that the discipline of architecture mainly fulfils the desire and whim of those who possess power (Findley, 2005). Findley (20050 states that colonialism cast a deep shadow over the sphere of colonial architecture. Jatio Sangsad Bhaban was commissioned by the military dictator President Mohammad Ayub Khan of Pakistan in 1962, firmly placing it within a political and colonial construct of the time (Choudhury and Bell, 2011). Khan's motivation for the commission was to demonstrate his awareness of the importance of democracy for the people of East Pakistan. Now the sovereign Bangladesh (Choudhury and Bell, 2011).

In commissioning the building, Khan was mindful of his political survival. It has been argued that the selection of Dhaka as a site for Jatio Sangsad Bhaban emerged from the idea that the location would appease the hearts and minds of those from East Pakistan (Ksiazek, 1995). In the US Congress in 1961, Khan said, "our aim always was and always has been and always shall be to have representative institution" (Ksiazek, 1993, p. 428). Ksiazek's (1993) argument reinforces Khan's political maneuvering in connection to Jatio Sangsad Bhaban "Ayub Khan commissioned the complex to deflect criticism that his government is favoring West Pakistan over East" (Ksiazek, 1993, p. 428). Jatio Sangsad Bhaban is the result of formulation of Ayub Khan's 1962 Constitution and should be understood from a political standpoint (Vale, 2008). Schendel (2009) writes that in 1962 Ayub Khan promulgated a Constitution mainly to fulfil his political ambition for long-term rule (Schendel, 2009). He envisioned Dhaka as a seat of national assembly and Islamabad as the seat of the national government. Khans, political machination revolving Jatio Sangsad Bhban infuriated. People of East Pakistan, Schendel (2009) writes, "The military regime saw itself as stern, fair, constructive, efficient and

avuncular. Most East Pakistanis, however, saw it as autocratic, imperialist, violent and geared to perpetuating the vice-regal power of Ayub Khan" (Schendel, 2009, p. 120).

The commissioning of Jatio Sangsad Bhaban is symbolic of the struggle of the Bengal people for self-determination and self-governance. In particular, it embodies the democratic values of the Bengal people. The building is the physical manifestation of democracy and embodiment of the essence of the Bangladeshi Constitution (Choudhury and Armstrong. 2012). Ksiazek compares Jatio Sangsad Bhaban to the Parthenon - it represents the democratic values of the Bengal people as the Parthenon represents the culture of Western democracy. Ksiazek (1993) writes, "[that] the national assembly building was intended to embody democratic ideals is everywhere apparent in Kahn's statements about the project" (Ksiazek, 1993, p. 428). Jatio Sangsad Bhaban has a significant role as both a symbol of oppression and as an emblem of democracy. The dual role of this nationalist building parallels the dual character of nationalism (Choudhury, Armstrong, 2013). The pre-liberation image of Jatio Sangsad Bhaban as a vehicle of oppression questions its symbolic representation of the hopes and aspirations of the Bangladeshi people.

Adds interest and complexity to its layers of political meaning. Jatio Sangsad Bhaban also emerged as a significant masterpiece as a product of a complex geopolitical agenda. It is argued that this iconic building is an outcome of the Smith–Mundt Law, alternately known as the US Information and Cultural Exchange Act (Choudhury and Armstrong, 2013). According to the Act, during the period of the Cold War, local elites were encouraged to take up higher studies in United States in order to consume American culture and practice, which they would expect to exercise in their own land (Choudhury and Armstrong, 2013). Kahn's engagement in Jatio Sangsad Bhaban is an indirect result of American Cold War policy (Choudhury and Armstrong, 2013).

The Historic Meaning of Jatio Sangsad Bhaban: This section critically considers archival and historic documents and. King's theory (1976) on colonial urban development (Choudhury and Armstrong, 2013) so as to articulate the historic meaning of Jatio Sangsad Bhaban. The extant literature suggests that Jatio Sangsad Bhaban ostensibly demonstrates the imposition of American neo-colonial ideas and order (Ksiazek, 1993). Ksiazek (1993) states in this regard: "Clearly, in the case of the complex at Dhaka, this dynamic indicates a colonial mentality, in which the ideals of a greater power are transposed onto one unlikely to resist. Does this make Sher-E-Bangla Nagar an example of American post-war cultural imperialism?" (Ksiazek, 1993, p. 435). This immediate assumption can be contested using the archival documents collected from the Public Works Department in Bangladesh and King's constructs of culture, technology and power structure (King, 1976). The archival documents and interviews clearly indicate that Louis I. Kahn was commissioned through an impartial selection of architects.[iii] In the document 'The Second Capital' published on the Independence Day of Pakistan, 1964, it is clearly stated that three Western architects, Le Corbusier (French), Alvar Aalto (Finnish) and Louis I. Kahn, were invited initially.

The document states: "The Central Ministry of Works chose 3 eminent Architects, namely Le-Corbusier of France, Prof. Alvar Aalto of Finland and Prof. Louis I. Kahn of United States, to consider one of them as the Architect of the Second Capital. These Architects are leaders of architectural thought and are respectful of the traditions of Architecture and its principles and have by their works shown to be capable of expressing a way of life. Conditions and circumstances favoured the selection of Prof. Louis I. Kahn." (Pakistan Public Works Department Report 1964, p. 4). According to some literature, Le Corbusier declined the offer, Alvar Aalto fell ill and Louis I. Kahn was commissioned by default (Choudhury and Bell, 2011). The Public Works archival documents also ruled out that there was any possibility of appointment of local architect, Muzharul Islam, prior to the commissioning of Louis I. Kahn.[iv] Choudhury and Armstrong describe the commissioning of Jatio Sangsad Bhaban in East Pakistan (later Bangladesh) in 1962 during the British post-colonial period as more a product of colonial urban development rather than of American neo-colonialism. King's 1976 theory of colonial urban development incorporates three components: culture, technology, and the power structure of colonialism redefining the historic meaning of Jatio Sangsad Bhaban (Choudhury and Armstrong, 2013).

The first component, culture, reveals the theory of colonial third culture with its distinctive value and belief system, its own institutions, social structure and social relationships (King, 1976). Ayub Khan, the client in the commissioning of Jatio Sangsad Bhaban, can be considered a product of a third culture comprising of British and South Asian cultures (Choudhury and Armstrong, 2013). King's second component revolves

around technological and industrial advancement and identity. Jatio Sangsad Bhaban ushered in a new era in terms of building technology in Bangladesh and thus represented the second component of King's colonial concept of urban development. King argues that; "The third element inherent in the concept of colonial urban development is the dominance-dependence relationship" (King, 1976, p. 37). This is evident in Kahn's design, in which the dominant function of the 'Citadel of Assembly' (The main Assembly Building) is separated from the subordinate or dependent function of the 'Citadel of Institution' (consisting of stadia, markets and museums, which were later not built) (Ksiazek, 1995). Thus, in addition to archival documents, all three components of colonial urban development have been instrumental in reshaping and refashioning the historic meaning of Jatio Sangsad Bhaban.

4. Ethical and Moral Meaning in Connection to Jatio Sangsad Bhaban

This section discuss the ethical and moral issues in relation to the participation of the two key players in Jatio Sangsad Bhaban — Louis I. Kahn and Ayub Khan. They argue that the underlying story of Jatio Sangsad Bhaban hinges on the personal gain of individuals, and may be viewed as one of self-interest and self-gain through a symbolic material object (Choudhury and Bell, 2011). The approach by Choudhury and Bell (2011) constitutes a new idea in regard to client and architect engagement in reconstructing existing notions and feelings. They delve into the concept of self-interest, turning to Adam Smith and his theory of self-interest in human nature. According to Smith, there are three aspects of self-interest: superior prudence, prudence, and imprudence (Smith, cited in Choudhury and Bell, 2011). Superior prudence denotes complete selflessness; prudence, a combination of selflessness and self-interest; and imprudence a complete interest in issues. The ethical dilemma of client Ayub Khan and architect Louis I. Kahn is somewhat prudent as it is directed to their fortune, power, image and reputation, which can be considered as a vehicle for their own tangible or intangible benefit. However, their prudent approach of self-interest may have helped to shape Jatio Sangsad Bhaban and this may not otherwise have been possible (Choudhury and Bell, 2011).

Alternatively, "Khan (the client) might have been elevated to the rank of superior prudence if he had: integrated Jatio Sangsad Bhaban within a futuristic nationalistic vision; and had expressed his concern about the masterly creation of the building not only its execution" (Choudhury and Bell, 2011, p. 110). However, Khan was a prudent rather than imprudent actor and his Islamic cultural values did not factor in Louis I. Kahn's design (Choudhury and Bell, 2011). In contrast, Kahn (the architect) could have reached the level of superior prudence if he had questioned the underlying purpose of the creation of Jatio Sangsad Bhaban, which was entirely political, rather than architectural (Choudhury and Bell, 2011). Kahn failed to understand the building's context in the light of the independence movement of Bangladesh (Choudhury and Bell, 2011). While it was expected a person of his stature would have supported the independence movement of Bangladesh, he did not (Choudhury and Bell, 2011). As Martin et al. point out, "a professional of high quality remains a role model to his fellow professionals, such a role model is not perceived as an expert, but as a person" (Martin et al., 2010, p. 2).

5. Conclusion

The contribution of Jatio Sangsad Bhaban is reflected in the depth of its intrinsic and extrinsic meanings. Its intrinsic meanings are revealed in its spatial and visible forms which are acclaimed worldwide and extrinsic meanings through its connection to history, culture, society and politics. The various multiple meanings of Jatio Sangsad Bhaban as summarised in this paper aim to generate new perceptions, evoke new thoughts and provide new insights thus enhancing its symbolic nature. Jatio Sangsad Bhaban conveys cultural, political, social and intellectual meaning as a symbolic and metaphoric expression. An iconic building that bears such a heavy weight of symbolism is expected to provoke controversy and generate question. As the Acropolis is an expression of the meaning of social and religious practice in Greece as well as wider democracy (Rhodes, 1995).

So there are multiple meanings for Jatio Sangsad Bhaban, the 'Acropolis of Bangladesh'. The Jatio Sangsad Bhaban is revered as a democratic emblem whose very meaning has not been contradicted or contested. This paper however raises issues that may not please many of the Jatio Sangsad Bhaban and Louis I. Kahn followers. However, the success of this paper lies not in shedding light on the positive aspects of the Jatio

Sangsad Bhaban, but to the extent it moves the reader. It divulges the complex meaning of the Jatio Sangsad Bhaban and aims to add diversity and richness to its meaning. Without meaning, a building cannot aspire to become architecture (Hershberger, 1970). As such, without controversy, complexity and contradiction the distinct identity and dignity of the Jatio Sangsad Bhaban cannot stand out.

Notes:

[i] According to archival records, initially 200 acres of land was allocated which was later increased to 1,000 acres of land.

[ii] Before the design of Jatio Sangsad Bhaban, Kahn visited all Mughal landmarks in India and was inspired by the beauty and geometry of Mughal public buildings (Ksiazek, 1993).

[iii] The document was collected from the Public Works Department in Bangladesh. One of the authors of this article conducted an interview with engineer Shahidullah, one of the partners of Muzharul Islam, who was instrumental in the commissioning process of JSB. Also interviewed was the previous Chief Architect of the Public Works Department, Government of Bangladesh, A.S.M. Ismail, in connection to the commissioning of the architect. Both of them discarded the notion of cultural imperialism from America or that the commission was connected to a foreign aid project.

[iv] Both the interviewees (engineer Shahidualla (an associate partner of architect Muzharul Islam from 1964–1970 in Vastukalabid) and Chief Architect A.S.M. Ismail) also discarded the story of commissioning of local architect Muzharul Islam.

References

Alexander, C. & Ishikawa, S. et al. (1977). A Pattern Language: Towns, Buildings, Construction. New York, Oxford University Press.

Ashraf, K. K. (2007). Taking Place: Landscape in the Architecture of Louis Kahn. *Journal of Architectural Education*, 61(2), 48-58.

Ashraf, K. K. (1994). Louis I. Kahn: National Capital of Bangladesh, Dhaka, Bangladesh, *Global Architecture*, 72(1994)1-47.

Blendell Jones, D. P. & Till, J. (Eds) (2005). Architecture and Participation. New York, Spon Press.

Choudhury, B. I. & Bell, G. (2011). The Engagement of Khan and Kahn in Jatio Sangsad Bhaban, *Architecture Plus Design*, 28(4), 104-111.

Choudhury, B. I. & Armstrong, P. (2012). Monuments and Architecture Shaping Bangladeshi Identity. *Global Built Environmental Review*, 8(3), 45-67.

Choudhury, B. I. & Armstrong, P. (2013). Jatio Sangsad Bhaban: A Legacy of British Colonial Urban Development or American Cultural Imperialism? *Global Built Environmental Review*, 8(3), 22-55.

Choudhury, B. I. & Armstrong, P. (2013). The Geopolitics of Jatio Sangsad Bhaban in the Cold War Era, *GSTF International Journal of Engineering and Technology*, 2(1), 22-28.

Choudhury, B. I. & Armstrong, P. (2013). JSB and Notions of American Cultural Imperialism in the Cold War Era. Proceedings of ACE (Architecture and Civil Engineering Conference), 49-156, Singapore.

Davis, H. (1999). The Culture of Building. Oxford, Oxford University Press.

Donougho, M. (1987). The Language of Architecture. *Journal of Aesthetic Education*, 21(3), 53-67.

Findley, L. (2005). Architecture, Politics and Cultural Agency. New York, Routledge.

Gieryn, T. F. (2002). What Buildings do? *Theory and Society*, 31(1), 35-74.

Goodman, N. (1985). How Buildings Mean. *Critical Inquiry*, 11(4), 642-653.

Goldberger, P. (2009). Why Architecture Matters. New Haven, Yale University Press.

Gordon, D. L. A. & Osborne, B. S. (2004). Constructing National Identity in Canada's Capital, 1900–2000: Confederation Square and the National War Memorial. *Journal of Historical Geography,* 30(4), 618-642.

Hershberger, R. G. (1970). Architecture and Meaning. *Journal of Aesthetic Education*, 4(4), 37-55.

Hurst, P. (2005). Space and Power: Politics, War and Architecture. Cambridge, Polity Press.

King, A. D. (1976). Colonial Urban Development: Culture, Social Power, and Environment. London; Boston: Routledge & Paul.

Ksiazek, S. (1993). Architectural Culture in the Fifties: Louis Kahn and the National Assembly. *Society of Architectural Historians*, 52(4), 416-435.

Ksiazek, S. W. (1995). Changing Symbol in Public Life: Louis Kahn's Religious and Civic Projects 1944–1966 and Architectural Culture at the End of the Modern Movement. Unpublished PhD, Department of Architecture and Planning, Colombia University, New York.

Lang, J. T. & Desai, M. et al. (1997). Architecture and Independence: The Search for Identity — India 1880 to 1980. Delhi; New York: Oxford University Press.

Martin, C., Vaught, W. & Solomon, R. C. (Eds) (2010). Ethics across the Professions: A Reader for Professional Ethics. New York, Oxford University Press.

Pakistan Public Works Department Report. (1964). Dhaka, Associated Printers Limited.

Rhodes, R. F. (1995). Architecture and Meaning on the Athenian Acropolis. Cambridge, Cambridge University Press.

Shawcroft, B. (1960). Architecture and the Layman. *Journal of Architectural Education,* 15(2), 10-14.

Stea, D. (1993). Placemaking. Sydney, Avebury.

Schendel, W. V. (2009). A History of Bangladesh. Cambridge, Cambridge University Press

Upton, D. (2002). Architecture in Everyday Life. *New Literary History,* 33(4), 707-723.

Vale, L. J. (2008). Architecture, Power, and National Identity. London; New York: Routledge.

Whyte, W. (2006). How Do Buildings Mean? Some Issues of Interpretation in the History of Architecture. *History and Theory,* 45(2), 153-177.