SUMMARY
This paper discusses certain aspects of the knowledge economy that are important in determining and understanding the implications of the knowledge economy on quality management assurance. The paper shows that the knowledge economy will justify and enhance quality management assurance efforts by SSA countries as they pursue economic development by closing the knowledge gap between knowledge economies and their economies. The information revolution in the world economy provides a lot of opportunities for SSA countries to capitalize on, enhance their quality improvement effort and improve their economic and bureaucratic performance. In the public sector, quality service delivery will come through interactive communications that will replace the collapsing meritocratic model that has not worked. The extent to which SSA countries will succeed to narrow the knowledge gap will depend on their ability to acquire, adopt, and disseminate technical knowledge.

1.0 The Global Knowledge Economy

1.1 Introduction

A knowledge economy is one whose knowledge sector has become the main source of wealth for the nation, eclipsing its industrial and agricultural sectors. The increasing dominance of the use of knowledge and information in what had been industrial economies is turning them into knowledge economies. These emerging knowledge economies are principally the U.S., Germany, and to a lesser extent some countries of Europe and Japan. Because of the way these economies are interconnected, they are better seen as a single emerging global knowledge economy. This emerging global knowledge economy includes the global infrastructure for telecommunications, data exchange, media and entertainment; the knowledge industries; the publishing industries; the computer hardware and software industries; the new financial systems that will support online transactions; the emerging global legal infrastructure based on the WTO, and the agreements in information technology, telecommunications and financial services; and the biotechnology and genetic engineering industries (Verzola, 1997).
These emerging economies, with their global coverage, are changing the society, and consequently, quality management assurance (QMA). Globalizing QMA means transferring some of the powers of states and bureaucrats to organizations like the World Trade Organization (WTO), and the global corporations. This paper examines the implications of these changing relationships on QMA in Sub-Saharan Africa (SSA). The main characteristics of knowledge economies, the basic principles of quality management assurance and its role in knowledge economies as well as the environment and knowledge gaps that SSA countries deal with, is examined in order to identify the key influence factors of knowledge economies on QMA in SSA countries.

1.2 Characterization of Knowledge Economies

In knowledge economies, information technology is no longer a business resource, but the business environment. Knowledge is a critical asset, just as labour and capital in the agricultural and industrial economies respectively. Knowledge is however, a public good: there is no marginal cost to an additional person using the knowledge. Because it is possible for people to use it without paying for it, governments must provide incentives for creating knowledge by the private sector through patents, copyrights, and other intellectual protection rights. Today there is a need to integrate knowledge into countries’ strategies for development. According to Peter Drucker, “The productivity of knowledge has become the key to productivity, competitive strength, and economic achievement. Knowledge has become the primary industry, the industry that supplies the economy with the essential and central resources for production.” Alfred Marshall has stated that “while nature ... shows a tendency to diminishing returns, man... shows a tendency to increasing returns, ... knowledge is our most powerful engine of production, it subdues nature, and ... satisfies our wants” (Naisbitt, 1984). The role of knowledge in development is no longer questionable. Knowledge is inextricably tied to growth and development. In knowledge economies, the strategic resource is information as opposed to capital in the industrial economies. Industries in knowledge economies are brain-intensive instead of capital-intensive. Knowledge is mass-produced, and this is the driving force of the economy.

In knowledge economies, public policy objectives are clearly defined, and data is collected to measure perceptions, attitudes, human concerns, social interactions, etc. Some of these social indicators include security, environmental quality, self-realization, participation, and basic living standards. There are also influence factors of public interest that policy decision-makers need for informed decisions, and thus better policies. The role of the government is specific and limited. The government ensures and enforces the rule of law, protects the disadvantaged, preserves a stable macroeconomic environment, but stays out of direct economic activities. Government policy is basically the product of cooperation, compromise, and conflict resolution between relevant groups, legislators and high officials in the bureaucracy.
The majority of the workforce in knowledge economies is in the tertiary or information sector, and is literate. The percentage of the workforce in agriculture and industry (manufacturing) has dwindled. In the United States for example, three percent of the labour force is in agriculture, and produces 120% of the food, whereas when the economy was an agricultural economy, 90% of the labour force was in agriculture, and produced 100% of the food. In SSA, over 60% of the labour force is in agriculture, producing less than 100% of the food.

A growing phenomenon in knowledge economies is that many workers telecommute, with flexible working hours. Some characteristics of the workforce are: continuous training and retraining, participative management, horizontal communication between workers and management, and changing the workplace organization through balancing of high technology with recreation-type activities. Workers know value is not increased through labour, but by knowledge, thus replacing Marx's Labour Theory of Value.

2.0 Quality Management Assurance (QMA)

2.1 Introduction

Quality management assurance in the knowledge economy is knowledge driven, and is proactive. The traditional methods of assessing quality through tests and inspections is considered obsolete, given the constraints of time, and the number of tests required. The philosophical changes required to adapt to the new approach for achieving higher and higher quality and performance goals has included a turning away from a mindset that the way to improve and confirm quality was through testing and inspection.

2.2 The Role of QMA in Knowledge Economies

In knowledge economies, the shift in mindset has resulted in major changes in the way management views employees and vice versa. In the United States for example, by eliminating the police type quality control checks, employees had to take responsibility for the quality of their work and output. Management realized that the employees were an inexhaustible source of creative innovative ideas for quality improvement – after all, the person who does the work knows more about his environment than anyone else. It did not take long for the management and workers to come to a common understanding that “given the right tools and information, the workers will get the job done right the first time.”

The beauty about quality assurance sciences is that its language and principles are applicable and can be used in almost every field of human endeavour, be it public or private. The critical factor for a successful quality assurance programme is KNOWLEDGE. Knowledge about what you need and what you do; knowledge about why you need it and why you do it; knowledge about when and where you get it and when and where you use it; knowledge... knowledge... knowledge.
Consequently, the only challenge is the availability and access to knowledge as well as the workers’ learning ability. Thus, the source of power in the knowledge economy is no longer money in the pockets of a few, but knowledge in the hands of many (Naisbitt, 1984).

2.3 World Trade and Global QMA

The key to success in the world market is quality and responsiveness. In this market, both the customers and producers are to a large extent very well informed and/or educated about their expectations. If the lack of knowledge and/or uncertainty faced by a consumer can create inefficiencies and even break the market at a national level it is easy to understand the importance of the need to clearly determine and define the way of providing quality management assurance in the world market, where quality must be taken for granted. In this environment, every player promises to assure quality and to provide information that each party is keeping his/her own promise. Failure to keep these promises will result in market failures. The question this raises is compliance to and enforcement of established quality management assurance standards. In real life, non-compliance situations will always arise, and to avoid disputes between affected parties, the need for a neutral arbitrator then becomes crucial. Since its establishment in 1948, the GATT/WTO talks have evolved through establishing agreements on trade and tariffs to publication of the ISO-9000 series of international quality management standards. These standards specify in detail the procedures for ensuring quality at all stages of production. These are then adopted by the International Standards Organisation (ISO), which is a guarantee that goods produced under these processes are of a certain quality. Most international buyers now insist that their regular suppliers obtain the ISO-9000 certification seal of approval.

To be a signatory in the WTO, is a nation’s outward manifestation of its internal commitment to establish and maintain a quality management assurance plan that ensures its ultimate compliance to all WTO quality and regulatory standards. The dissemination of information about quality to all members is an important responsibility of WTO. As opposed to government intervention after the fact, a quality management assurance plan will provide proactive information which is critical to reduce uncertainties in the market. In order to address the basic problems of verifying and enforcing compliance to quality standards the WTO is responsible for providing the appropriate environment for the creation, negotiations, agreements, establishment and/or adoption of international quality and regulatory standards. Once these standards are adopted, WTO also defines and ensures agreement on the methods to use for enforcement – Government intervention, legal measures, institutional penalties, etc. – to avoid surprises in case of fraud and/or default.

The WTO, as the custodian of international trade quality and regulatory standards, is singularly qualified to establish and maintain an effective quality management programme that will ensure communication of information about quality to customers and suppliers in a consistent and predictable manner.
3.0 Sub-Sahara Africa and QMA

3.1 Historical Legacy

The systems of government, and to a certain degree, the way the SSA economies operate, are closely tied to the colonial past of these countries. Basically, the purpose of colonies was to provide a source of raw materials for the industries of the colonising authorities and a market for their manufactured goods. The administrative structures were by their very nature, suppressive, since the top priority of the colonial authority was the maintenance of peace, law and order to enable colonial businesses function smoothly. Independence to these countries was basically a substitution of one governing authority by another one, with the administrative structures of the colonial era intact. Independence meant self-rule without any regard for the sovereignty and rights of the people.

Most African governments use the rational meritocracy as organizing principle of public sector management. Meritocracy should lead to economic and political liberalization, a necessary condition for quality management assurance in the public sector (Wescott, 1998). Unfortunately, the rational hierarchical meritocratic model has failed in many African countries. Governments are not able to carry out basic functions of formulating policies, delivering services, and maintaining the infrastructure. Promoting the model has led to perverse effects on incentives, encouraging “rent-seeking,” “free-loading,” and other unintended outcomes. The reason is that many African civil services have competing goals as task performance/service delivery on the one hand, and political incorporation on the other hand. The central feature of such bureaucracies is group solidarity, subordination of specialized, expert knowledge to bureaucratic control, lack of transparency in application of rules, high tolerance of misdemeanor and ineptitude, and general laxity in the administration of the career service.

3.2 The Knowledge Gap and the Struggle for Development
SSA economies are dominated by the primary sector, both in terms of the contribution to GDP, and in employment. The exports of SSA countries are mostly primary agricultural products, an indicator of the limited knowledge even in agriculture. However, as part of the global economy, SSA countries are obliged to make efforts to leap-frog from the agricultural economies into the knowledge economy at least in certain sectors or aspects of the economy (Kwankam and Ningo, 1996). The stumbling block is the knowledge gap. Today, the colonial administrative structures left intact, and its subsequent colonial mentality and mindset amongst most of the administrators, creates an environment where the people who are the principal consumers are not vested with the right to dictate or choose the quality of their goods and services. This environment is characterised by the lack of an impartial judiciary to enforce judgements; the lack of respect for human rights; inadequate systems for providing quality challenging education to support new technology and define local technology; and the lack of national quality certification programmes to ensure quality management assurance.

The knowledge gap between developing and developed countries has been the major concern of most policy-makers and/or politicians in the last decade. The understanding of how and what creates knowledge gaps is crucial in determining appropriate development strategies. It is important to understand that living in a global economy, the world economy conditions many aspects of economic performance. The global economy may provide opportunities for long term growth, but it also generates volatility and exposure to shocks in the short run, especially in financial markets. Developing countries must learn from the experiences of the present knowledge economies, especially economies with a success record in closing the knowledge gap like Korea (World Bank, 1999).

3.3 The 12th Player Phenomenon

Although SSA is part of the global economic system, it is not participating sufficiently in world trade and technological development. Rather, the sub-continent is sitting on the bench, while the play is going on.

- SSA has raw talents – raw materials, intellectuals, labour, etc.
- SSA has weaknesses – style of government, indiscipline, (corruption, etc.),
  team work (coups, dictators, etc), boots (poor)
- SSA needs development, and so must join the team, at least, a second division team.
4.0 Implications of the Knowledge Economy on QMA in SSA

4.1 Introduction

Since the knowledge economy has its basis in the most technologically advanced, and the most economically developed countries, it is logical to anticipate that the influence of the knowledge economy on any aspect of management in SSA countries will be highly positive. However, experience has proven that the response of each economy to change varies significantly depending on the macroeconomic environment, the level of knowledge, the effectiveness of public development policies, as well as the national wealth, embedded in these economies at the time the change is introduced. Studies by the World Bank (1999) have concluded that the much vaunted knowledge revolution may be a good thing or a set-back for developing countries because the global explosion of knowledge contains both threats and opportunities.

As stipulated above, quality management assurance impacts a cross-section of the economy. Consequently, SSA countries must of necessity, and by design, do everything to understand the implications of any change (external and internal) on the quality management assurance strategies. It is therefore appropriate to examine the implications of the knowledge economy on quality management assurance by analysing key aspects of the knowledge economy and the actions and/or lack of action as SSA countries respond in their economies.

4.2 Information Technology

Information technology is not only a business resource but the business environment in the knowledge economy. SSA countries are living with information technology. However, these systems are not being used as would be expected to improve productivity and economic growth, or at best they are used very minimally, and introduced in the society in a de facto and haphazard manner.

The primary source of information technology in these societies is through some aid projects or international programme. To acquire and use these systems will require a major investment in training not only the ultimate users, but also in training a pool of human resources to be used for maintenance. Although the cost of this technology is rapidly declining, the private sector in SSA economies is not financially positioned for such long term investments. It will therefore require government intervention to invest on research and development in the acquisition and use of information technology. When such an investment is possible, then, the influence of information technology on quality management assurance will be very positive.

Quality management assurance requires the extensive use of information technology to disseminate knowledge about quality – the quality of products, borrowers, credit ratings, etc. With computers such information can be shared easily. Obviously, the productive uses of this technology will be highly dependent on
the knowledge base of the country. Consequently, government in order to optimize its return on the investment must train (by additional investment) human resources to create technologies locally that support the work environment and are complimentary to computers. Not everything requires actual investment. Given the right political will, most SSA countries have policy tools and resources they can use to negotiate either with their former colonial masters, international institutions, and/or non-governmental organizations to acquire as much information technology as they need.

It is worthwhile noting that in the SSA countries themselves, there is a big gap between the knowledge embedded in the information technology and the knowledge available in the society. It is therefore imperative that governments do not only invest in acquiring information technology from abroad, but must also invest in training and developing the local knowledge base.

4.3 World Trade

The implications of the knowledge economy on quality management assurance are more evident when we examine the role SSA countries play or must play when they join the world trade organization. Of the two hundred and eleven world economies, one hundred and thirty-two are members of the WTO. World trade in general provides an excellent forum for SSA countries to gain access or at least awareness of new technologies and knowledge used in packaging the goods in the market. This occurs through communications between buyers and suppliers. As the world market becomes more and more knowledge driven, the opportunities for SSA countries to acquire knowledge is increased (see table 1).

<table>
<thead>
<tr>
<th>Technological Intensity</th>
<th>% Total, 1976</th>
<th>% Total, 1996</th>
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<tbody>
<tr>
<td>High Technology Goods</td>
<td>11</td>
<td>22</td>
</tr>
<tr>
<td>Medium Technology</td>
<td>22</td>
<td>32</td>
</tr>
<tr>
<td>Low Technology Goods</td>
<td>21</td>
<td>18</td>
</tr>
<tr>
<td>Other Primary Goods</td>
<td>34</td>
<td>13</td>
</tr>
<tr>
<td>Resource Based Goods</td>
<td>11</td>
<td>11</td>
</tr>
<tr>
<td>Others</td>
<td>1</td>
<td>4</td>
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</tbody>
</table>

Note: High technology goods alone doubled their share of global trade while the share of primary goods dropped to less than 25%

World trade also exposes SSA countries to international benchmarks for quality. To supply in the world market means competition with the best performers in the market. To gain and maintain a market share requires the establishment and maintenance of good standards, measurements, tests, and quality assurance systems, which will be mandated by competition as well as international quality and regulatory standards.
In the case where SSA countries have to buy in the world market, they would also have to invest in order to build a knowledge base needed to understand the technology that is embedded in the products that they use. Even if SSA countries are not members of the WTO, they are compelled by the nature of their products to sell to developed or knowledge economies. Since these countries are members of WTO, their national quality standards form the basis of ISO-9000 standards. In order to maintain their WTO certification SSA countries would need to guarantee the quality of their products that are inputs for the developed economies.

4.4 Foreign Direct Investment.

Multinational firms are the world's leaders in innovation, and they do invest worldwide in their production facilities. Open trade regimes often attract more investments with more efficient technology and management which can generate spillovers (externalities) for the host countries (see Table 4.4).

In the case where the relationship between the foreign-owned firm and the host country is good, the benefits can be very impressive. For example, both the local suppliers and the workers can acquire and adopt the technology and the processes transferred by the firm. Since most of these firms will be WTO certified, such local plants must also produce products and use processes that meet the international standards. In this case the impact on quality management assurance will be positive.

However, SSA economies do not attract enough FDI due to constraints inherent in their economic environment. They attract less than one percent of all FDI (Table 2).

<table>
<thead>
<tr>
<th>Table 2. Distribution of Foreign Direct Investments (top 10)</th>
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<tr>
<td>% Total</td>
</tr>
<tr>
<td>China</td>
</tr>
<tr>
<td>Brazil</td>
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<tr>
<td>Mexico</td>
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<td>Indonesia</td>
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<td>Poland</td>
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<td>Malaysia</td>
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<td>India</td>
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<td>Chile</td>
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<td>Argentina</td>
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<tr>
<td>Venezuela</td>
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<tr>
<td>Other Developing Countries (including SSA)</td>
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<tr>
<td>Sub-Sahara Africa</td>
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</tbody>
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SSA countries need to improve on their level and management of incentive programmes and policies in order to attract more FDI. The case of Free
Trade Zones, and lower custom taxes for inputs are good examples that need improvement.

4.5 Impact on People, Organizations, and Government

The evolution of the knowledge economy has resulted in restructuring and transformations in the societies. There is a basic change in the mindset of the people in the society. They become more and more aware of their rights to choose from a variety of things. They are free to choose better and better ways of doing things. As more and more people are aware of, and start using these services, they will start to demand more and better options of the service. As people become more informed about health issues, environmental quality, etc., they will start to demand higher and higher quality of service. Migrant workers upon return to their host countries will demand higher and higher quality of service and better ways of doing things.

The impact on organizations will be even bigger. As people become more aware of their rights, the management of organizations and bureaucrats will have to change. With the introduction of information technology in the work place, there will be reductions of inefficiencies and corrupt practices that normally thrive on ignorance and the use of discretion. As both workers and managers change, the hierarchy in the work place will be replaced by a horizontal organization with decisions being made from the bottom-up instead of from the top-down. This would open the door for people to continuously improve on their jobs and consequently the quality of their output.

Such changes in the society will bring pressure to bear on the government. As the people start demanding their rights, governments will have to improve on their performance in delivering public goods. A more informed society will re-enforce the democratic culture and demand more liberalization and good governance. As stated above, the role of the government will be more limited and much clearly defined.

These interactive communications will also affect jobs by facilitating the "downsizing" and "rightsizing" movement (Rondfeldt, 1992). Businesses, government agencies, non-profit and other organizations are attempting to reduce expenses by streamlining their operations. Interactive communications enables them to shed middle layers of management whose function is to mediate between organizational levels or constituents.

Another implication of the knowledge economy on quality management will occur by default. The multinational corporations that sell the technology will want to protect their reputation. Hence, they will build in quality standards in the utilization packages of their products, that is, they will produce "idiot proof" products. Compliance to the quality specifications will be a prerequisite for the system to function. Hence, as people learn more about the quality of the products, and the attributes of the services they require, organizations must perform more efficiently and the government must play
4.6 Communications

The knowledge economy breathes on accurate and instantaneously shared information. Knowledge is of no use if it is not disseminated to the right people at the right time. In order to make quality decisions, policy makers, managers, employees, consumers, politicians, etc. must be provided with relevant knowledge. Computer systems and networks, provided by international agencies and multinational enterprises, do exist and SSA countries can use them to create quality management information systems (QMIS) to ensure dissemination of information and a reduction in information failures.

Another impact of the knowledge economy is the use of the communications revolution which has greatly reduced, or eliminated the traditional intermediaries. The process, known as "disintermediation," eliminates the middlemen who simply expedite distribution without enhancing the value of what is transferred (Morino Institute, 1995).

Disintermediation greatly democratizes access to the means of communication and to information and knowledge. It takes the power conferred by the control of information away from a tiny elite and makes it available to many.

The process of disintermediation also helps level hierarchies because it makes it easier for anybody inside or outside of an organization to communicate directly with anyone else. In most organizations that have become heavy users of electronic mail, for example, this has led to a much more open culture that obviates the need for intercessors. This greatly speeds the flow of information. Instead of moving up and down the chain of command and then horizontally to other departments, individuals, customers, suppliers, etc., and back again, information moves laterally among all the elements involved in a job.

4.7 Interagency and Intergovernmental Relationships

The knowledge products available in the world market in general, and in SSA countries in particular, are from developed countries, who are evolving, or have evolved, into knowledge economies. The primary channels for introducing knowledge and/or knowledge products into SSA economies are international agencies or firms that are based in, and funded by, these developed countries. Both these countries and institutions enjoy special relationships with the SSA host countries.

SSA countries have the opportunity through these special relationships to negotiate into their agreements, the requirements, rights, licenses, etc. that will allow them to acquire and adopt knowledge.
5.0 Conclusions and Recommendations

5.1 Conclusions

This paper has discussed certain aspects of the knowledge economy that are important in determining and understanding the implications of the knowledge economy on quality management assurance. The findings show that the knowledge economy will justify and enhance quality management assurance efforts by SSA countries as they pursue economic development by closing the knowledge gap between knowledge economies and their economies. The information revolution in the world economy provides a lot of opportunities for SSA countries to capitalize on, enhance their quality improvement effort and improve their economic performance. Multinational information technology firms, and international agencies also provide access to knowledge that SSA countries can tap to improve their economic performance in general and their quality management assurance effort in particular through the creation of integrated quality assurance information management systems.

The public sector is not spared of these emerging changes. Quality service delivery will come through interactive communications that will replace the collapsing meritocratic model that has not worked.

The extent to which SSA countries will succeed in their development effort is dependent on their ability to acquire, adopt, and disseminate technical knowledge. Most important SSA countries must design and implement development policies that balance the acquisition of technical knowledge (increase) with the reduction in information failures (decrease) as they struggle to close the knowledge gap. This translates to their establishing quality management assurance as a priority in their policy decision making process.

SSA countries must observe (monitor), study, and understand the trends and changes (knowledge-related) in the world market which constitute the components of the knowledge gap between the knowledge economy and their economies. They must understand that the world economy conditions the performance of their economies. As a prerequisite they must identify and understand the constraints (political, economic, structural, cultural, etc.), inherent in their environments, and how these constraints hinder their economic programmes and participation in the world market.

5.2 Recommendations

Conscious of the above, SSA countries, prior to negotiating relationships with governments, international organizations, agencies, and/or world trade regulatory bodies, must create and establish national development policies that must consider and include the following:

10 Acquisition and adoption of technological knowledge: – such a policy must clearly identify the strategic sectors of the economy, the intended end users of
technology and associated local technologies to be developed to compliment any technical knowledge acquired externally.

20 Reduction of information failures: – such a policy must of necessity create and maintain a comprehensive national “knowledge gatekeepers network” that will require the acquisition of advanced information technology systems to ensure communication with the external knowledge gatekeepers, and the development of local technology that will ensure communication and/or dissemination of knowledge amongst local knowledge gatekeepers. Major investment will also be required to develop and capitalize on local communication traditions in SSA countries in order to facilitate a two-way dissemination of knowledge.

30 Public support for, and appreciation of new technology:– This will provide incentives to search for the best technology, to invest in training, and also to adapt and/or develop (upgrade) existing designs.

40 Education: – training and retraining policy is a priority. All discussions about knowledge in the absence of an effective educational system is baseless. A national technology training policy is necessary. This includes continuous training in technology for all levels of managers and workers. Training to build the human capacity to support the technology is important such as training “knowledge managers.”

50 Good governance, strong and impartial judiciary, respect of human rights, etc.:– As the role of government becomes smaller and more defined, it must ensure that the basic institutions that allow markets to function are effective. The lack of these structures do hinder economic cooperation, as well as productive relationships between nations.

60 QMA Policy: Establishment and maintenance of national quality management assurance standards that will ensure certification of quality, safety, and reliability standards for both products, processes, and procedures, is imperative. A two-word recommendation to summarise everything is “capacity building,” to narrow the knowledge gap.

References


“Benchmarking Knowledge-based Economies.”


Biographical Note

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