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A LITERATURE REVIEW ON ENVIRONMENTAL REGULATION AND POLICY AND QUALITY ASSURANCE: A BLUEPRINT FOR THE MALAYSIAN FOOD AND BEVERAGE COMPANIES

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ABSTRACT

The main objective of this study is to develop a life cycle mode for a process-oriented quality assurance in organizational performance of food and beverage companies. As an iterative and dynamic process, quality assurance is interwoven in the developmental process of food and beverage companies. Through the review of literatures in existence, specifically those that focus on procedures, frameworks, methodology, a process oriented framework is developed around non-linear sequential stages presented as: planning/before, design and production (during), post production and delivery (after). The model is approved through an advanced systematic methods employed in collecting, organizing and generating reports about quality assurance (QA) needed updates or changes. According to the approach of process oriented lifecycle, many studies emphasizes that quality assurance needs a friendly environment that take quality as a key factor and a work value for attaining the objectives of an organization. A practical quality assurance model is then proposed by this study that complies with the guide of food and beverage development phases. In each stage of development, practical steps are recommended. There is great potential in the quality assurance model for its transformation from static, the state of after-the-fact to a state of dynamism and iterative state, thereby improving the ongoing self-improvement culture, rather than compliance of circumstance.

Keywords: *Total quality management, quality assurance, organizational performance, food and beverages, environmental regulation and policy*

INTRODUCTION

According to Newton (2007), the philosophy of quality assurance is of utmost concern to company management around the globe in the midst of restructuring of agro-allied sector and shift in paradigm of technology.

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The confluence of contextual factors such as responsiveness, financial constraints, competitive global economy and external pressures for greater accountability drives quality debate. These factors hinder the progress of an organization to apply QA procedures in order to develop production, services and research which will sometimes suffer from the poor quality and low standard (Chua and Lam, 2007). Occasionally, these efforts are initiated to respond to requirement externally and are limited frequently to the institution's administrative operations belonging to an industry (Aly and Akpovi, 2001). QA procedures using self-implementation are often not well integrated and narrowly focused on outcomes of employee's teaching (Welsh and Dey, 2002). This can lead to subsequently omission of important variables and the process leads to those results. In external evaluation, their focus is on accountability and compliance, in addition to their poor integration with strategic planning of the organization which result to a limited effect of their experience in organization (Harvey and Newton, 2004). Therefore, this paper focuses on the foundational process of organizational performance in food and beverage companies while it recognizes the holistic nature of agro allied in systematic QA concept from inputs to processes, then to outputs.

F&B INDUSTRY IN MALAYSIA

One of the environmentally rich countries in the world is Malaysia with abundant mineral resources and high biodiversity but presently its heritage and tradition are facing many environmental challenges such as water and air pollution and natural resources exploitation (Muhammad, 2011). Similarly, Adeoye and Elegunde (2012) explained organizational performance to be corollary efforts of productive assets comprised physical, human and capital resources, purposely to fulfill vision and dream, or to accomplish mutual aim and objective. There is challenge in locating practical or comprehensive framework of quality assurance that covers agro-allied process, outputs and inputs systematically while many companies have different forms of procedures of self-regulated quality assurance and guidelines in implementation.

According to Economic Report (2015/16) of Malaysia, the production index for food and beverage industry increased by 4.4% due to strong domestic demand. Among the sub-sectors which recorded significant increase in production were cocoa, chocolate and sugar confectionery (15.5 percent), biscuits (12.2%), other processed food (8.8%), flour milling (3.4%) and sugar refineries (1.4 %). Malaysia as a country over the last decade has been a net importer of food produces with report of above USD 3.2 billion while the performance in terms of export has doubled in the same period of time (FMM-MATRADE, 2005/06) (FMM-MATRADE , 2005/06, p. A13). According to research conducted by Ahmad (2009) on marketing practices in Malaysian Agro-based industry, it is posited that agro-based products have shorter life span due to the nature of the products and require good marketing practices to increase the sales. Therefore, this conceptual study posits to reveal the relationship between environmental regulation and policy (ERP) and Quality Assurance to integrate the quality of an efficient factory system management, implementation of standards, procurements and current manufacturing

procedures in conjunction with economic, social and environmental development into the Malaysian food and beverage companies.

Quality and Quality Assurance

The concept of quality is associated with a definitional challenge alongside its associated derivatives which include quality assurance, quality control, quality audit, quality enhancement and total quality management, expectations, interest, stems from the juxtaposition of external and internal stakeholder's requirements of the company. Those contradictory expectations and requirements are often contribute and complicated to the imprecision of operation and concept that encapsulate all efforts to get quality explained. However, quality is viewed to be stakeholder-relative. Thus, it is elusive, multi-dimensional and slippery concept rather than unitary idea (Green, 1994; Giertz, 2001). Toremen, Karaku, and Yasan (2009) posited that in TQM , the responsibility for quality is located in both the individuals and team through some developmental processes which represent an approach to quality assurance to be more accordant with the structures and fundamental ethics of educational organizations than many of the more mechanistic and hierarchical processes. The absence of understanding around the context of quality is majorly prompted by the points of view of the stakeholder from this quick quality review and definitions of QA.

Contradictorily, the absence of clarification attracts a doubled-edged possibility; it is conducive to meet the interests and needs on the other hand of the various external and internal stakeholders. In another word, this renders the quality concept hard to conceptualize due to its impression and vagueness. In other word, QA seems to be both implementable and achievable but it is subjected to various perspectives and narratives as a technique employed to measure the achieved goals and objectives of the organization (Doherty, 2008). Newton (2007) from this idea in mind advocate for a practical approach and acknowledges the nature of quality relatively to stakeholders and to the particular assurance mechanism and context connected with quality, such as accreditation, audit, assessment and feedback. The use of pragmatic approach by stakeholders is likely to foster QA ongoing improvement and culture particularly within the unpredictable, diverse and dynamic context of agro-allied sector in contrast to the perspective of the tradition that posits quality assurance as a systematic approach used to anticipate and prevent mistakes.

It is hoped ultimately that the model proposed shall enrich and contribute to issues surrounding the food and beverage companies' quality performance by making a provision for practical model of quality assurance strong enough of potentially eliminating the skepticism in Food and Beverage industry. This paper thereby clarifies the context and concept of QA and quality in an attempt to articulate these goals. It then examines the literatures concerning QA framework, methodology and procedures.

A lifecycle of process oriented QA is built around non-linear sequential phases based on this review and clarification is presented:

1. Before: planning
2. During: design and production
3. After: post-production and delivery

To propose a systematic and practical model suitable of ensuring agro-allied sector to integrate QA ideas into development of the sector and to share the lesson learnt from this model's trial and initial implementation is the main objective of this paper.

QUALITY ASSURANCE IN CONTEXT

Quality assurance, based on clarification and comprehensive review, is structured around three sequential non-linear phases namely: planning and analysis; design, prototype; and production; and post production and delivery (Abdous, 2009; Akanmu, Bahaudin & Jamaludin, 2016). Basically, the maintenance of a desired level of quality in a service and product is called quality assurance especially by means of attention to every phase of the process of delivery or production. It involves assessment procedures and systematic management employed to ensure quality outputs and improved quality improvement. This study employs planning and analysis, design, production, post production and delivery (Abdous, 2009; Cukier, *et al*., 2012; Tran, Cahoon, and Chen, 2011) as befitting sub-variables to investigate Quality assurance in Food and Beverage companies of Malaysia.

It is noteworthy that ISO was developed from Quality Assurance (Tran, Cahoon and Chen, 2011). Quality Assurance enabled the occurrence of quality management during the new-product development process and focused on continuous improvement as a key quality management practice. Quality assurance is conceptualized in terms of systematic approach; primarily, it involves quality management practices and establishment of organizational procedures and quality standard (Cukier, et al., 2012). Also, it is an activity that provides necessity in terms of evidence needed to establish confidence that the quality function is properly performed (Karapetrovic and Willborn, 2000; Lau and Tang, 2009; Law, 2010).

According to Newton (2007), any quality assurance model, method or system will always be affected by situational factors and context such as socio-economic level, geographical locations and the health of the employees. To understand the working mechanism of QA within the scope of this study, a simple framework of QA to organizational performance is represented in the figure 1 below.

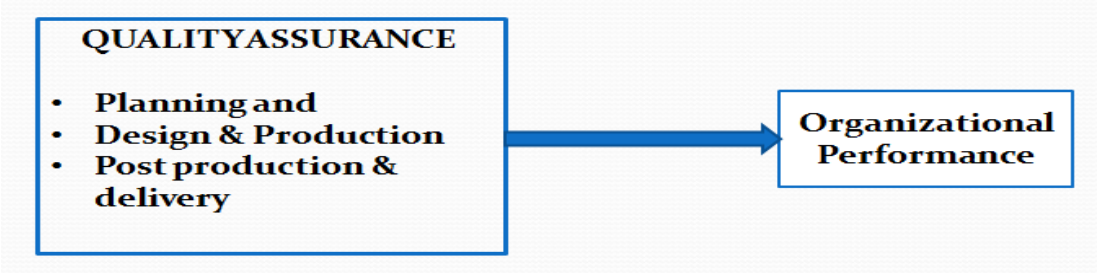

Figure 1
The systemic and procedural steps of QA to achieve organizational performance.

This is seen as an iterative, dynamic and continuous program. Thus it can be easily incorporated into practices daily of the frontline quality control restructuring the food and beverage industry experience instead of serving as an approach of after-the-fact. Variables such as planning, design, production, post-production, delivery and organizational performance shape the QA process. The culture of agro-allied sector is permeated by pressures impacted by the technology burgeon with afterward consequences on the narratives of quality assurance to determine standards in particular and procedures for collaboration and communication on the accessibility and usability design on one any aspect.

Notably, among the commonest challenges shaping QA are market forces, employers and transnational industry. The new era of these sector executors consisting profit-oriented firms, financial performance, transnational providers and publishing corporations is encouraging the companies to differentiate themselves by providing quality services. QA is fast turning to a distinction seal as a recruiting and marketing tool in the midst of the growing and competitive market. In accordance with this philosophy, the QA context is a complicated chain of dynamics and interactions in the mist of numerous variables that are interlinked.

The lack of comprehension and acknowledgment of those forces and dynamic is restructuring the narrative and debate of what quality constitute is possible to inhibit the implementation of quality assurance into organizational performance of F&B companies.

Environmental Regulation and Policy

In order to cope with the environmental problems, the Government of Malaysia has passed some important environmental law and policy such as the Environment Quality Act 1974 and its Regulations 1989, the Environmental Quality Order 1989, the Protection of Wildlife Act, the National Forestry Act 1984, the Fisheries Act 1985, the National Parks Act 1980, the International Environmental Laws, the Civil Law Act 1972, the Principles of the English Laws, the Federal Law, Sharia Laws, the Malay Customary Laws and some international environmental obligations. All these laws are being implemented in order to attain sustainable environment and development in the country. These laws are set in place to instill checks and balances in the manufacturing industries (food and beverage companies inclusive) and to improve the quality of performance as

the agro-allied sector in Malaysia plays a significant role in the Malaysia economy. Thus, it is worthwhile for any company contributing to environmental pollution to abide by the environmental regulation and policy in order to achieve a complete quality outcome of performance. This study therefore intends to contribute to knowledge concerning quality management and assurance by integrating compliance of environmental regulation and policy with QA to food and beverage organizations in Malaysia. Thus, this study aims to identify any enabling or hampering structures for effective policies on Quality assurance practices in Malaysia as it is widely known that food and beverages constitute a major source of energy in most countries, to have an effective organizational performance through dynamic social and economic environment - every industry must implement a complex management which combines Quality assurance to their philosophical principles.

Process-oriented Lifecycle for Quality Assurance in the Food and Beverage Companies

From the discussion made above, there is a proposition of a process-oriented model developed with the aim of helping organization to apply the process of Quality assurance structured around the fundamental process of food and beverage development and delivery. It is noteworthy to disclose the fact that, the planning, design, production and delivery of products need collaboration and a streamlined workflow of many experts for instructional subject matter and working together technical in a team environment (Phillips, 2005). Therefore, the proposed quality assurance model portrays a centralized and institutionalized frameworks for planning, designing, producing and delivering Food and Beverage products. Abdous and He, 2008 stated that content, technology and design are combined synergistically from this centralized model by using different template series developed on key concepts of research and practices.

1. Planning (before)
2. Design and production (during)
3. Post-production and delivery (after)

Starting from the phase of planning, a workflow diagram with a project plan is used as quality assurance tools for the flowchart of the development process and for the clarity of presumptions, expectations and timeline. In the arrangement of the stage for the proposed model of quality assurance, the phase is critical, particularly in updating and refining development templates. The sets of standards of quality underpinning the content collection checklists and production templates are defined by this phase.

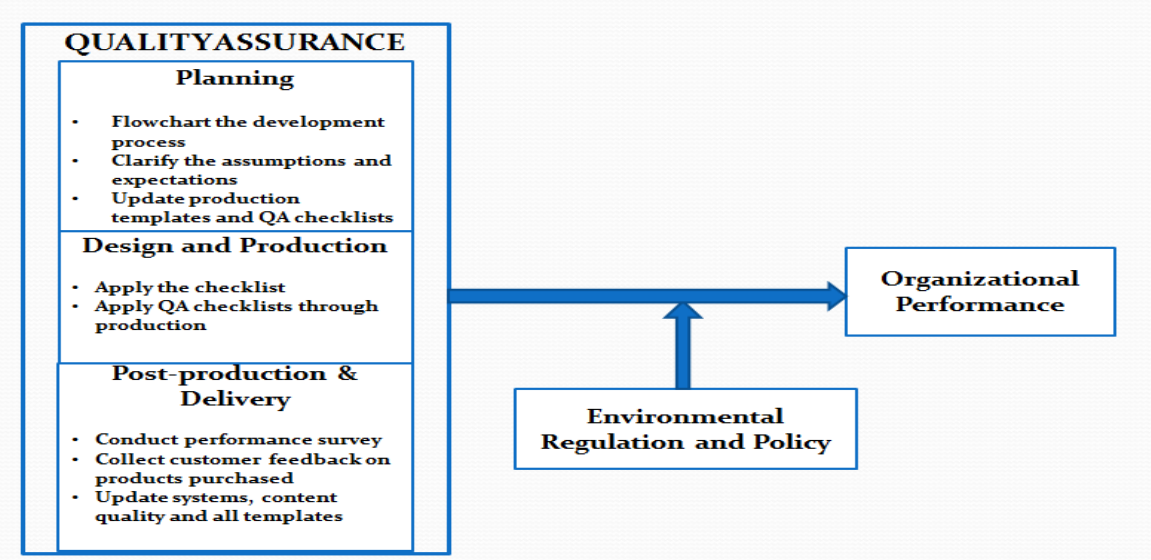

Figure 2
Process-oriented lifecycle model for QA in Food and Beverage Companies

During the phase of design and production, consistency, appropriateness and comprehensiveness of the services are provided by using collection templates of pre-designed content. These templates consist of the crucial factors of a conducive environment like the employee-centered developmental programs, content matrix with objective integration, the use of diversified activities of design and engagement, opportunity offer for interaction, collaboration, feedback and meaningful assessment. Tailored Quality assurance checklists in this phase are employed by a team to enable the implementation of the guidelines and standards as indicated in the first phase (Hosiea et al. 2005). The adaptation and design of the checklists is done by best practice application of structural design and through proof from research-based standards.

The templates are created by technicians, designers and instructional technologists as improvement tools and self-assessment without affecting freedom and creativity negatively. These systematic practices are applied within the process to make sure there is effectiveness and consistency to embrace the culture of unity. This leads consistency and uniformity throughout the process of the production by consistently providing features according to the standards indicated form the first phase. A quality assurance checklist in details is used for each production tool during the production phase by team members. There was a development of an advanced system to streamline this process in order to collect, generate and organize reports about quality assurance needed changes and updates.

With the integration of the checklists used for the production process, Quality assurance reporting and implementation are facilitated by this system and also reduces the number of tasks related to the process. This system allows the companies to improve the checklists during the production process connect with their roles. The model gives a solid

operational framework which enhances quality assurance as a practice done daily by process of production using and mirroring a pre-defined production templates and procedures. Opportunities are provided by this process-oriented model for refinement and continuous improvement which is supported by an advance dynamic system to provide effective organizational performance.

IMPLEMENTATION OF QUALITY ASSURANCE MODEL

It is important to figure out the conceptual development of quality assurance from accountability into improvement before initiating complicated actions of some abundant literature review on quality assurance. Newton (2002) distinguishes between two successive phases of quality implementation. In the early 1990s, the first phase was accompanied with bureaucracy and accountability and was particularly interested in searching for a blueprint replication. The quality concept to some extent was loaded politically and ideologically in this first stage. In the second phase, the quality awareness was developed on what is called an alternative perspective and understanding on quality and quality policy as applied in the mid-1990s in accordance with the conditioned quality perceptions of front-line companies. The evolution implicitly expressed the irreconcilable drift between improvement and quality if not the incapacity of quality alone to give effective foundations for discharging improvement in quality. Additionally, between improvement and quality, quality I frequently employed as marketing and recruiting yardstick (Boyle and Bowden, 1997). Furthermore, institutional status is assigned with quality to improve organizational performance and to expedite relationships internationally (Brennan and Shah, 2000). Jeliazkova and Westerheijden (2001) from a procedural stance point out those system of external quality assurance that follow a four-stage model with minor variation that starts with a permission from external coordinating agency, then followed by the peer visit submission, a public report and a self-evaluation. From a methodological point of view, Rekkedal (2006) proposed three column matrixes namely: evaluation, accreditation and benchmarking developed through improvement control and quality assurance.

In the planning phase, quality is broadly employed as a scale of distinction and approval in the growing presence of agro-allied industry. Additionally, evaluation is promoted to improve both with steering resources and strategic decisions through the pressure exerted by the constraints of budget. Self-evaluation process and competition awareness is achieved through benchmarking while indulging in exchanging and sharing of experiences (Jackson, 2001). Three contemporary classifications of QA listed below were discerned from an operational perspective:

1. The outcome and assessment movement mainly concentrates on result just like focusing on reputation. The policies of the movement focus mainly to access increment to quality product and customer satisfaction enhancement.
2. TQM, as adopted from practices and ethics of business is an approach that focuses on process of continuous improvement and organizational performance. With TQM's potential, it can capture both external and internal perspectives of

stakeholder, capable of developing comprehensive approach to assure quality while facilitating innovation and change. However, according to Srikanthan and Dalrymple (2003), the approach is seen to be more relevant to organizational and administrative performance due to the perceived disconnection between TQM concepts and organizational process.

3. Report of performance and accountability indicator employed as an indicator of quality. From this point of view, performance, design placement and retention rates, enrolment trends, design and organizational performance are employed to measure the effectiveness and impact of the companies. The quality judgments of Agro-allied sector have moved from implicit and traditional perception in accordance with the characteristics and reputation to a perception exclusively based on proofs of achievement and outcomes. These classifications and sub-classifications represent general practices in the tradition of agro-allied sector.

However, accrediting agencies and agro-allied sector institutions to implement proactively transparent and rigorous QA procedure and guideline have been forced by certain action caused by the above-mentioned contextual factors (competitiveness, accreditation and technology). According to Belawati and Zuhairi (2007), the implementation of the quality assurance framework has been promoted locally and internationally by these agencies with a high level of comparability and similarities mainly focusing on improving the organizational performance.

Koul and Kanwar (2006) highlight the introduction of quality culture, enhancing building of capacity to implement and promote the systems of quality assurance while establishing quality focus on planning and production. There is variation in the integration of quality assurance system with the frameworks of the policy which is reflected particularly in the criteria and standards applied in various perspectives of quality control. At companies that take quality as their first priority, predetermined criteria and standard are followed generally. Less prescriptive general guidelines and self-improvement as sacrifice are always imbibed at many companies.

According to Rekkedal, (2006), the emergence of debate in quality structured around many organizations has prompted a reflection of body of knowledge from many perspectives of stakeholders as regards the knowledge of quality assurance and quality itself. In overall, while the dissimilarities tend to be process-related, the inputs and outputs are covered by the similarities. There is still reliance of quality measure on inputs like top manager qualification and satisfaction ratings on outputs and organizational performance (Parker, 2003). From this point of view, there is proposition of process-oriented quality assurance based on development and delivery phase with the belief that integrating quality assurance within this context will probably enhance organizational performance with the provision of enabling conditions.

THE EFFECT OF ENVIRONMENTAL REGULATION AND POLICY

Environmental issues are business issues and that has led them playing, increasingly, a more significant role within organizations. Christofi *et al.* (2008) stated in their study that QA has to incorporate environmental sustainability in order to maintain and strengthen an organization's competitiveness, services and productivity. It should be noted that the global and national regulations are the force attracting businesses to take into consideration the environmental impacts of all their processes, products and services (Stainer & Stainer, 1997).

According to Blower *et al*. (2013), the effect of environmental policy and regulation on top management's commitment and environmental performance was gathered through responses from a survey of chief financial officers and chief management accountants in the top 200 listed companies. The purpose of the study is to examine the antecedent factor, top management's commitment to environmental issues, for the adoption of a well sophisticated internal environment information system that are measured by the broad-scope, timeliness, aggregation and integration of the information. The result showed that compliance with environmental regulation and policy and top management commitment to environmental issues have a significant relationship with sophisticated internal environmental information system and organizational performance. Also, Sarkis (2001) stated that organizational environmental regulation and policy has been the key factor of many management theorists and progressive thinking practitioners throughout the early part of the 1990s. The study researched on the manufacturing's role in corporate environmental sustainability. The study revealed that the natural environment and the manufacturing functions are becoming extremely connected.

In other words, from total quality environmental management (TQEM) point of view, United States Environmental Protection Agency approved the categorization of TQEM into seven elements namely: environmental leadership; strategic environmental quality planning; environmental quality management systems; human resources development; stakeholder emphasis; environmental measurements; and environmental quality assurance. The research study concluded that integration and development of environmental concerns into corporate practice ranging from industrial ecology to green purchasing will be influenced by environmental pressures and practices.

In the same trend, Rebelo, Santos, and Silva (2014) examined a generic model for integration of quality, environment and safety management systems . The purpose of this study is to propose a generic model of Integrated Management System of Quality, Environment and Safety (IMS-QES) which can be adapted to adopt numerous management systems. A survey was carried out in a real environment from 160 employees of a Portuguese organization where the conceived model was implemented in a first phase for the integration of Quality, Environment and Safety Management Systems. The result of this study highlighted: the reduction of conflicts between individual systems with resources optimization; creation of additional values to the business by eliminating several types of wastes; the integrated management of

sustainability components in a global market; the improvement of partnerships with suppliers of goods and services; reducing the number of internal and external audits.

LESSONS LEARNED

For a framework of operational and systemic quality assurance, the model proposed needs a supportive and conducive surrounding that takes quality into consideration explicitly as a great value of work and an enhancer for attaining goals within an organization as it provides and documents guidance, in line with continuous improvement and reinforcement (Silimperi et al., 2002). The early trial of the model application gives some important lessons in accordance with this valuable enabling condition:

In the stage of planning, there is clarification on expectations of quality supports to execute the implementation path of quality assurance. Provision of a clear view about overall quality requirement, process and expectation is very important. In this regards, keeping in mind the three production consideration is critical.

i. Gain the buy-in of the employees by explaining the importance of each step to be taken and clarifying the overall process of the practices. Frequently, employee resistance is prompted from lack of understanding of the process objectives and from eagerness to accept new methods of practice development.
ii. The assurance that workers both technical employees and the top managers comprehend truly the meaning of the differences in checklist's items.
iii. To reach a common understanding of the checklist items, support the members of the production team to ensure that systematically they would be implemented. Quality is contingent upon how it is experienced and used in implementation by the managers (Newton, 2007).

In the design phase, as well as production, creating additional checklists for the production team is liable to be unproductive except responsibilities and roles are understood and identified clearly. Additionally, implementation of QA must be supported by a well standardized system to facilitate crucial tasks. Flexibility, efficiency and systematic practices of system are crucial for a successful implementation of quality assurance's model. In the phase of delivery, there is need for double consideration. From the managerial view of staff, procedure abilities and readiness significantly affect how F&B products are delivered. Therefore, providing both ongoing technical support and development opportunities is highly important for a pleasant experience of F&B companies.

From the manager side, the readiness of the managers, delivery strategies, tactics and technical literacy affect their degree of interaction with the consent. The result from quality assurance does not exclusively dependent on the process of production but rather on manager enablement and empowerment by providing systematic ongoing support, orientations and collections of feedback. It is very paramount to affirm the fact that the proposed model with these considerations in mind is a kind of roadmap and an

operational tool that sustains organization to apply efficient and systematic procedures of quality assurance. However, its implementation success depends on key enabling factors including a common understanding of QA checklists, the clarification of quality requirements and support of both employees and managers.

CONCLUSION AND FUTURE RESEARCH

This study started by highlighting the inefficiency of quality assurance procedures and frameworks in existence by providing justifications for the choice to build a model around development and delivery in food and beverage companies. The study reviewed critically the existing literatures on quality assurance and its framework and mechanism after shedding light on QA and quality definitional issues. It is in this regards that a three-phase model that parallels to the process of development is proposed. The model aims to move quality from static state, after-the-fact state to an iterative and dynamic state thereby promoting a culture of continuous self-improvement rather than one of the compliance. Additionally, the model is compatible with daily processes of TQM and it enables a deep penetration to the main activities of the developmental operations (Hodson and Thomas, 2003). There is potentiality in this approach to increase the overall quality of experience and organizational efficiency in Food and Beverage to resolve some of the skepticism that wraps the system of Food and Beverage production. To recommend future research avenues, this study supports the urgent action for deeper research to investigate the impacts and efficiency of the proposed model on organizational performance. Precisely, to what extent does QA that follows this model contribute to efficient organizational performance? Further research is needed from a procedural perspective to investigate the impact of the systematic activities developed to enhance implementation of quality assurance by determining how the system contributes to the promotion and embedded of practices related to quality assurance into daily routines. Similarly, how does the model proposed, significantly contribute to the promotion of a quality assurance culture within the production units? In conclusion, although quality can be challenged and contested with its implementation requiring enabling conditions and varies contextually, it should be noted and clearly understood that the debate on QA would continuously be alive and drive competition within an organization.

REFERENCES

Abdous, M. (2009). E-learning Quality Assurance: a process oriented lifecycle model. *Quality Assurance in Education*, *17*(3), 281–295.

Abdous, M. and He, W. (2008). Streamlining online course development process by using project management tools. *Quarterly Review of Distance Education*, Vol. 9 No. 2, pp. 181-8.

Adeoye, A., and Elegunde, A., (2012). Impacts of External Business Environment on Organisational Performance in the Food and Beverage Industry. *British Journal of Arts and Social Sciences*, 6(2), 194–201.

Ahmad, A. (2009). Marketing Practices among Malaysian SME's in Agro-based Industry. *Persidangan Kebangsaan Ekonomi Malaysia*, *2*, 145–150.

Akanmu, M.D., Bahaudin, A.Y.B. and Jamaludin, R. (2016). A partial least square structural equation modelling preliminary analysis on total quality management elements and environmental regulation and policy influencing organizational performance in the food and beverage companies of Malaysia', *Int. J. Productivity and Quality Management*, In Press.

Aly, N. and Akpovi, J., (2001). Total quality management in California public higher education. *Quality Assurance in Education*, Vol. 9 No. 3, pp. 127-31.

Belawati, T. and Zuhairi, A., (2007). The practice of a quality assurance system in open and distance learning: a case study at Universitas Terbuka Indonesia (The Indonesia Open University). *The International Review of Research in Open and Distance Learning*, Vol.8 No.1.

Blower, J. D., Gemmell, A. L., Griffiths, G. H., Haines, K., Santokhee, A., and Yang, X. (2013). A Web Map Service implementation for the visualization of multidimensional gridded environmental data. *Environmental Modelling & Software*, *47*, 218-224.

Boyle, P. and Bowden, J., (1997). Educational quality assurance in universities: an enhanced model. *Assessment and Evaluation in Higher Education*, Vol. 22 No. 2, pp. 111-21.

Brennan, J. and Shah, T., (2000). Managing Quality in Higher Education: An International Perspective on Institutional Assessment and Change, *Open University Press, Buckingham.*

Catalin, S. H., Bogdan, B., and Dimitrie, G. R. (2014). The existing barriers in implementing total quality management. *Annals of the University of Oradea, Economic Science Series*, *23*(1), 1–8.

Christofi, Petros, Sisaye, S., and Bodnar., G. (2008). The integration of total quality management into sustainability. *Internal Auditing-Boston-Warren Gorham and Lamont Incorporated*, *23*(1), 33–39.

Chua, A. and Lam, W. (2007). Quality assurance in online education: the universities 21 global approach. *British Journal of Educational Technology*, Vol. 38 No. 1, pp. 133-52.

Cukier, W., Barkel, E., Vaughan, T., and Gekas, G. (2012). Quality assurance in Canadian police services. *The TQM Journal*, *24*(4), 295–309.

Doherty, G. D., (2008). On Quality in Education. *Quality Assurance in Education,* Vol. 16 No. 3, pp. 255-65.

Economic Report (2015/2016). Economic Performance and Prospects. Department of Statistics and Ministry of Finance, Malaysia.

Ellis, R., Jarkey, N., Mahoney, M., Peat, M. and Sheely, S. (2007). Managing quality improvement of eLearning in a large, campus-based university. *Quality Assurance in Education*, Vol. 15 No. 1, pp. 9-23.

FMM Directory (2005/06), Member Directory, Federation of Malaysian Manufacturers, Selangor.

Giertz, B. (2001). Anything goes? The concept of quality revisited. Paper presented at The Sixth QHE Seminar, Birmingham, May 25-26.

Green, D. (1994). What is quality in higher education? Concepts, policies and practice. What is Quality in Higher Education? *SRHE and Open University Press, Buckingham*, pp. 3-21.

Harvey, L. and Newton, J. (2004). Transforming quality evaluation. *Quality in Higher Education*, Vol. 10 No. 2, pp. 149-65.

Hodson, P. and Thomas, H., (2003). Quality assurance in higher education: fit for the new millennium or simply year 2000 compliant? *Higher Education*, Vol. 45 No. 3, pp. 375-87.

Hosiea, P., Schibecib, R. and Backhausc, A. (2005). A framework and checklists for evaluating online learning in higher education. *Assessment and Evaluation in Higher Education*, Vol. 30 No. 5, pp. 539-53.

Jackson, N., (2001). Benchmarking in UK HE: an overview. *Quality Assurance in Education*, Vol. 9 No. 4, pp. 218-35.

Jeliazkova, M. and Westerheijden, D., (2001). A next generation of quality assurance models: on phases, levels and circles in policy development. *A paper presented at The Consortium of Higher Education Researchers (CHER) 14th Annual Conference: Higher Education and its Clients: Institutional Responses to Changes in Demand and in Environment*, Dijon, France, September 2-4.

Karapetrovic, S. and Willborn, W., 2000. Quality assurance and effectiveness of Audit systems. *International Journal of Quality & Reliability Management*, 17(6), 679–703.

Koul, B. and Kanwar, A., (2006). Perspectives on Distance Education: Towards a Culture of Quality, Commonwealth of Learning, Vancouver.

Lau, A. W. T. and Tang, S. L., (2009). A survey on the advancement of QA (quality assurance) to TQM (total quality management) for construction contractors in Hong Kong. *International Journal of Quality & Reliability Management*, 26(5), 143–158.

Law, D., (2010). Quality assurance in Post-secondary education: Some common approaches. *Quality Assurance in Education*, 18(1), 64–77.

Mohammad, N., (2011). Environmental Law and Policy Practices in Malaysia: An Empirical Study. *Australian Journal of Basic and Applied Sciences*, 5(9), 1248–1260.

Moldovan, L. (2012). Integration of Strategic Management and Quality Assurance in the Romanian Higher Education. *Procedia - Social and Behavioral Sciences*, *58*, 1458–1465.

Newton, J. (2007). Embedding quality culture in higher education, a selection of papers from the First European Forum for Quality Assurance, November 23-25, 2006 pp. 14-20

Newton, J., (2002). From policy to reality: Enhancing Quality is a Messy Business.

Oliver, R. and Herrington, J. (2003). Factors influencing quality online learning experiences. *Quality Education at a Distance*, Kluwer Academic, London.

Parker, N., (2003). The Quality Dilemma in online education. *Theory and Practice of Online Learning*, pp. 385-421.

Phillips, R. (2005). Pedagogical, institutional and human factors influencing the widespread adoption of educational technology in higher education. *Proceedings of the 22nd ASCILITE Conference. Queensland University of Technology, Brisbane,* December 4-7.

Rebelo, Manuel Ferreira, Santos, G., and Silva, R. (2014). A generic model for integration of quality, environment and safety management systems. *The Learning Organization*, *26*(2), 143–159.

Rekkedal, T., (2006). State of the art report on distance learning and e-learning quality for SMEs. The EU Leonardo Project: *E-learning Quality for SMEs: Guidance and Counseling*.

Sarkis, J. (2001). Manufacturing's role in corporate environmental sustainability - Concerns for the new millennium. *International Journal of Operations and Production Management*, *21*(5/6), 666–686.

Silimperi, D., Franco, L., van Zanten, T. and Macaulay, C. (2002). A framework for institutionalizing quality assurance. *International Journal for Quality in Health Care*, Vol. 14 No. 1, pp. 67-73.

Srikanthan, G. and Dalrymple, J., (2003). Developing alternative perspectives for quality in higher education. *International Journal of Education Management*, Vol. 17 No. 3, pp. 126-36.

Stainer, A., and Stainer, L. (1997). Ethical dimensions of environmental management. *European Business Review*, *97*(5), 224–230.

Töremen, F., Karakuş, M., & Yasan, T. (2009). Total quality management practices in Turkish primary schools. *Quality Assurance in Education*, *17*(1), 30–44.

Tran, H., Cahoon, S. and Chen, S. L., 2011. A Quality Management Framework for Seaports in their Supply Chains in the 21st Century. *The Asian Journal of Shipping and Logistics*, 27(3), 363–386.

Van Damme, D. (2002). Trends and models in international quality assurance and accreditation in higher education in relation to trade in education services. *Paper presented at The OECD/US Forum on Trade in Educational Services, Washington*, DC, May 23-24.

Welsh, J. and Dey, S., 2002. Quality measurement and quality assurance in higher education. *Quality Assurance in Education*, Vol. 10 No. 1, pp. 17-25.