

Does Standardized Innovation Management Systems Matter For Innovative Capability And Business Performance?

EGBERI, Agbarha Kelvin PhD

Department of Business Administration and Management, School of Business Studies Delta State Polytechnic, Ozoro, Delta State, Nigeria.

**Corresponding Author: EGBERI, Agbarha Kelvin*

ABSTRACT:- In this paper, we assessed whether standardized innovation management systems framework matter for innovative capability and business performance of companies. Our results were based on two hundred and seventeen (217) surveys distributed predominantly to research and development and technical managers. Within the sample of companies assessed, two diverse groups are identifiable – companies with OECD and ISO certifications. Findings of our study showed that standardized innovation management systems have significant positive link with innovative capability and business performance. The results of the study are relevant as they revealed for the first time that significant connections exist between standardized innovation management systems, innovative capability and business performance. While the findings will be of utmost value to companies, they may be most valuable for small and medium enterprises (SMEs), as this knowledge could assist such enterprises to enter into the culture of innovation while efficiently structuring the multifaceted and frequently chaotic innovation process. In addition, standardized innovation management system should be adopted by companies in their practices while companies that are yet to be encouraged to do so, as this study conclude that standardized innovation management systems augment innovation capability and business performance of companies.

Keywords: Standardized innovation management system; Innovative capability; Business performance; corporate competitiveness Total quality management

JEL Classification: M1, M12, M19

I. INTRODUCTION

In innovation management systems literature, it is a common place that innovation is a fundamental dynamics for enhancing corporate competitiveness and economic expansion of both developed and developing economies. Perhaps, one of the reasons why the innovation process according to Matias and Coelho (2011) is deemed an indispensable corporate process that has to be appropriately managed in order to foster business performance in aspects of business profitability, productivity, quality of service, customers and employees satisfaction. Standardized innovation management systems (SIMS) refer to homogeneous management systems that accelerate the conversion of organization's innovation strategy into effective actions (Casanove & Morel, 2018). Thus, SIMS is not just shiny novel inventions, they relate to an organization's ability to recognize and chase new areas of opportunities while fathoming and reacting to fluctuating conditions in its environment (International Standard Organization – ISO, 2019).

SIMSs are sets of principles and standards premeditated to aid organizations navigate the multifaceted process of innovation, schematize their activities and improve efficiency of its management (Moises, Martian & Luc, 2016). Prior to the emergence of SIMSs, no precise standard for managing corporate innovation process existed. However, corporate innovation process management were usually tackled via total quality management (TQM) system or the application of the International Standard Organization (ISO 9001) standard for quality management. Moreover, prior researches (see Kondo, 2000; Bossink, 2002; Prajogo & Sohal, 2003; Prajogo & Hong, 2008; and Jayawarna & Holt, 2009) have studied SIMSs to assess the benefits, limits and drawbacks in areas of innovation and creativity without due attentiveness on innovative capability and business performance. In fact, numerous empirical researchers have found a significant positive link between TQM and innovation at organizational levels (Prajogo & Sohal, 2003; Jayawarna & Holt, 2009; and Dilan, Said & Sivan, 2016). On the other hand, other studies have revealed that TQM principles are valuable for creating a wide-range of capabilities far beyond the sphere of quality (Prajogo & Sohal, 2006; Santos-Vijande & Alvarez-Gonzalez, 2007; and Prajogo & Hong, 2008). Nevertheless, it is rational to develop management standards, following quality principles and the acquaintance developed, to manage innovation. Certainly, organizations cannot manage all facets of innovation; they can facilitate innovation via SIMSs (Casanove, & Morel, 2018; and Cerezo-Narvez, *et al*, 2019). Consequently, this present empirical paper investigates if standardized innovation management systems matter for innovation capability and business performance of companies in Nigeria. The remaining

parts of this paper are sectioned as follows: review of related literature, methodology, result, conclusion as well as recommendations.

II. REVIEW OF RELATED LITERATURE

2.1 Standardized Innovation Management Systems (SIMS)

Prior empirical evidences that investigated the impacts of management standards on innovation have focused on standards on total quality management (TQM), environmental management (EMS) and integrated management systems (IMS). More so, these studies have been extensively discussed in management literature and the positive or negative discernment on innovation have been highlighted. While there are inconsistent view on empirical findings, there is widespread agreement that TQM and management standards, has favorable effects on innovation, specifically at the strategic level (Kondo, 2000; Prajogo & Sohal, 2006; Prajogo & Hong, 2008; and Casanove & Morel, 2018).

Standards are international or universal principles that provide guidance for people or organizations on a particular issue. Standards describe the ideal scenario situation or norm of organizations' measures to be truly innovative. This is done according to three predominant criteria that determine organizations innovation capability: innovation planning, execution, and deployment. Whilst literature suggests that standardized innovation management systems cannot be used to manage all facets of innovation, it can facilitate innovation capability and business performance; however, it is cumbersome for innovation and business performance to be efficiently managed by means of total quality management (TQM).

Standardized innovation management system (SIMS) are homogeneous management system that fast-tracks the translation of organization's innovation schemes into effective and efficient actions (Casanove & Morel 2018). According to Moises, Martian and Luck (2016), SIMSs are sets of standardized principles premeditated to assist firms navigate the complex process of innovation, augment business performance, and augment efficiency of its management. Casanove, and Morel (2018) asserted that SIMSs breakdown the existing structural, cultural or organizational impediments among/between organizations.

SIMSs are centred on guidelines which are obtainable from international organizations like the Organization of Economic Community Development (OECD), International Standard Organization (ISO) etc. These standards provide best practices to aid implementation of the innovation dogmas of firms and address issues such as but not limited to innovation, creativity management, strategic intelligence, intra/entrepreneurships and self-assessment of innovation management. Organizations set up a framework to aid the achievement of the targets of their core businesses and the replicability of the activities (Asif, De-Brujin, Fisscher, Cory Searcy, 2010). In this paper, we focused on ISO 50503 – innovation management and ISO 50502 – innovation management assessment.

ISO 505202 is the innovation management system, which gives support for innovation management in all types of organizations. ISO 50502 is premised on some vital principles mirroring innovation management principles like adding values to organization, motivating innovation capabilities, and adoption of best practices that promotes business performance. On the other hand, ISO 505303 is based on guidance on methods and tools for collaborating partners towards achieving a successful interaction between/among organizations (Casanove, More & Negny, 2017). However, both standards are geared towards improving the innovation capability and business performance or organizations at all levels (operational and strategic levels).

2.2 Innovation Capability (IC)

In reality, innovation is a powerful driver for creating value, competitiveness and growth in profitability (Cerezo-Narvez, *et al*, 2019; and Saunila, Ukko, 2012). In literature, there is the axiom that innovation management assists organizations to grasp innovation capabilities and/or opportunities to create and initiate novel business models, products or services into the market (Teece, 2007; and Therrien, Doloreux & Chamberlin, 2011). Thus, organizations must know their innovation capabilities in order to build models, products or services that can make them thrive in the market or industry (Love & Roper, 2015). In other words, innovation capability means identifying organizations competencies, abilities or skills that guarantee business sustainability.

In recent times, innovation capability has become a must-have in small, medium and large sustainable organizations (Scuotto, Santoro, Bresciani & Del-Giudice, 2017; Müller & Voigt, 2018). Numerous organizations are today striving towards becoming more innovative to answer the paradigm: disrupt or being disrupted (Casanove, *et al*, 2017, and Casanove & Morel, 2018). Moreover, question as to whether standardized innovation management systems will promote innovation capability is an issue that has been left uninvestigated in management literature; hence, this study argues that propose that there is no relationship between SIMSs and innovation capability of companies.

2.3 Business Performance (BP)

Business performance refers to a structural process for assessing the accomplished tasks (actual results) against intended results (goals and objectives) of an organization in a given period (Neely, 1998). Diverse methods have been employed in management literature in assessing business performance (e.g. key performance indicators: KPI) namely SWOT, PESTLE among others. Aside these methods for assessing business performance, several dynamics have been considered to influence business performance, such as organizations technological skills, physiological drive, managerial ability and attitude of employees (Shahzad, 2014).

Notwithstanding the dynamics affecting business performance, literature suggests that standardized innovation management systems (SIMSs) are capable of influencing business performance (Dick, Gavin & Casadesus, 2008; Rysman, Simcoe & 2008; and Mir, Casadesús & Petnji, 2016). Nonetheless, existing literature shows that no empirical evidence has focused on SIMSs and business performance of companies, particularly in Nigeria. Consequently, this study argues and proposes that there is no link between SIMSs and business performance in the Nigerian setting.

III. METHODOLOGY

In this paper, an empirical analysis based on a survey was utilized. The survey was designed using standard/guidelines of Organization of Economic Community Development (OECD) and International Standard Organization (ISO). The survey, which comprised of seventeen (17) questionnaire items, was distributed to three hundred and ninety-seven (397) Nigerian firms out of which one hundred (100) are ISO certified. Employees of the Research and Development (R&D) department and Technical Management staff of each firm answered the questionnaire predominantly. In only few firms, questionnaire was answered by employee with low responsibility. Besides, the level of educational background of the research subjects was very high in each firm as most of them had a university degree.

In the survey, two hundred and seventeen (217) valid questionnaires were completed and retrieved from the research subjects. The reliability of research instrument was carried out via Cronbach Alpha and result of the pilot test showed Cronbach Alpha of 0.82, which is found consistent; hence, the research instrument was deemed reliable (Cronbach, 1951). Moreover, the mean responses of research subjects were computed and result used to assess whether standardized innovation management systems (SIMSs) impacts on the innovative capability and business performance of Nigerian firms. Data obtained from field survey were analyzed via descriptive (simple percentage, mean, standard deviation, skewness, kurtosis and variance) and inferential (multiple regression) statistical techniques. The multiple regression model is given as:

$$SIMSs = f(IC, BP) \tag{eq.1}$$

Eq.1 implicitly expresses the link between standardized innovation management systems (SIMSs) and innovation capability (IC) and business performance (BP). However, eq.2 is explicitly expressed as:

$$SIMSs = \alpha_0 + \beta_1 IC_i + \beta_2 BP_i + \epsilon_i \tag{eq.2}$$

Equations 1-2 are the implicit and explicit forms of the multiple regression model. The regression model was analyzed via STATA 13.0 statistical software.

4. Results

Table 1: Demographic Information of Research Subjects

S/N	Variables	Categories	Frequency(n=217)	Percentage(%)
1.	Gender	Male	139	64.1%
		Female	78	35.9%
		Total	217	100%
2.	Category of Respondents	R&D	104	47.9%
		Technical Managers	87	40.1%
		Others	26	12.0%
		Total	217	100%
3.	Educational Level	No University Degree	7	3.2%
		First Degree	92	42.3%
		Master Degree	100	46.1%
		Philosophy Degree	18	8.4%
		Total	217	100%

Source: Field Survey, 2020

Table 1 reports the demographic information of the research subjects and it was shown that 139(64.1%) are male while 78(35.9%) are female. On the category of respondents, it was found that 104(47.9%) and 78(40.1%) are employees in the R&D departments and Technical Managers of the Nigerian firms. This supports the fact that most of the research subjects are grounded SIMSs, innovative capability and business

In this paper, our results were based on two hundred and seventeen (217) surveys that were distributed predominantly to R&D and technical managers of Nigerian firms. Within the sample of firms investigated, two diverse groups are identifiable – firms with OECD (SIMSs) and ISO (SIMSs) certifications. Concisely, the standardized innovation management systems (SIMSs) have a significant positive relationship to organization innovative capability (IC) and business performance (BP). Furthermore, the results of the current study are relevant, as they empirically reveal for the first time that significant connections exist between SIMSs, IC and BP, indicating that SIMSs impacts IC and BP significantly and also confirms the findings of extant literature (Kondo, 2000; Prajogo & Hong, 2008; and Moises, Martian & Luc, 2016).

While these findings will be of utmost value to firms, they may be most valuable for small and medium enterprises (SMEs), as this knowledge could assist such firms to enter into the culture of innovation while efficiently structuring the multifaceted and frequently chaotic innovation process. More importantly, SIMSs principles and guidelines should be investigated further to ascertain whether these frameworks are more valuable for SMEs and to isolate the economic sectors in which they are found to be the most efficient. Additionally, organizations should uphold SIMSs in their practices while firms that are yet to be encouraged to do so, as this study concludes that standardized innovation management systems enhance innovation capability and business performance of organizations.

REFERENCES

- [1]. Asif, M, De-Bruijn, E., Fisscher, O.A.M, & Searcy, C. (2010). Meta-management of integration of management systems. *The TQM Journal*, 22(6), 570-582
- [2]. Bossink, B.A.R. (2002). The strategic function of quality in the management of innovation. *Total Quality Management*, 13(2), 195-205.
- [3]. Casanove, A. & Morel, L. (2018). Innovation management principles from ISO 50500 Series. *International Association for Management of Technology IAMOT 2018 Conference Proceedings*, pp.1-15
- [4]. Casanove, A., Morel, L. & Negny, S. (2017). ISO 50500 series innovation management: overview and potential usages in organizations. *ISPIM*, Jun 2017, Vienna, Austria. Hal-01624970, pp. 1-10
- [5]. Cerezo-Narvez, A., Garcia-Jurado, D., Gonzalez-Cruz, M., Pastor-Fernandez, A., Otero-Mateo & Ballesteros-Perez (2019). Standardizing innovation management: An opportunity for SMEs in the aerospace industry. *Processes*, 7(2019), 270-282; doi:10.3390/pr7050282
- [6]. Cronbach, L.J. (1951). Coefficient alpha and the internal structure of thesis. *Psychometrika* 16, 297–334.
- [7]. Dick, P.M. Gavin, H.I. & Casadesus, M. (2008). Shedding light on causation between ISO 9001 and improved business performance. *Int. J. Oper. Prod. Manage.*, 28 (7), 687-708.
- [8]. Dilan, A.J., Said, A. & Sivan, R. (2016). The new standard for innovation management systems: A comparative study of Volvo Construction Equipment's innovation management system and CEN/TS standardized innovation management system. *Master Thesis in Innovation Management, Department of Innovation, Design and Engineering (IDT), Mälardalens University*, pp. 1-50
- [9]. Jayawarna, D. & Holt, R. (2009). Knowledge and quality management: An R&D perspective. *Technovation* 29(11), 775-785.
- [10]. Kondo, Y. (2000). Innovation versus standardization. *Total Quality Management*, 12(1), 6-10.
- [11]. Love, J.H. & Roper, S. (2015). SME innovation, exporting and growth: A review of existing evidence. *Int. Small Bus. J. Res. Entrep.* 33(2015), 28-48.
- [12]. Matias, J.C.O. & Coelho, D.A. (2011). Integrated total quality management: Beyond zero defects theory and towards innovation. *Total Qual. Manage. Bus. Excel.* 22(8), 891-910.
- [13]. Mir, M., Casadesús, M. & Petnji, L.H. (2016). The impact of standardized innovation management systems on innovation capability and business performance: An empirical study. *J. Eng. Technol. Manag.* 41(2016), 26-44.
- [14]. Moises, M., Martian, C. & Luck, H.P. (2016). The impact of standardized innovation management systems on innovation capability and business performance: An empirical study. *Journal of Engineering and Technology Management*, 41(2016), 26-44. <http://dx.doi.org/10.1016/j.jengtecman.2016.06.002>
- [15]. Müller, J.M., & Voigt, K.I. (2018). Sustainable industrial value creation in SMEs: A comparison between industry 4.0 and made in China 2025. *Int. J. Precis. Eng. Manuf. - Green Technol.*, 5(2018), 659–670.
- [16]. Neely, A.D. (1998). *Measuring Business Performance*. London: Economist Books Publishers Incorporation.
- [17]. Organisation for Economic Co-operation and Development (2015). *Frascati Manual. Guidelines for Collecting and Reporting Data on Research and Experimental Development. Measurement of*

- Scientific, Technological and Innovation Activities; The Measurement of Scientific, Technological and Innovation Activities; OECD Publishing: Paris, France, 2015; ISBN 978-9264238800.
- [18]. Prajogo, D.I. & Sohal, A.S. (2003). The relationship between TQM practices, quality performance, and innovation performance. *Int. J. Qual. Reliab. Manage.*, 20(8), 901-918.
- [19]. Prajogo, D.I. & Sohal, A.S. (2006). The integration of TQM and technology/R&D management in determining quality and innovation performance Omega. *Int. J. Manage. Sci.*, 34(3), 296-312.
- [20]. Prajogo, D.I., & Hong, S.W. (2008). The effect of TQM on performance in R&D environments: A perspective from South Korean firms. *Technovation*, 28(12), 855– 863.
- [21]. Rysman, M. & Simcoe, T.S. (2008). Patents and the performance of voluntary standard-setting organizations. *Management Science*, 54(11), 1920-34.
- [22]. Santos-Vijande, M.L., & Alvarez-Gonzalez, L.I. (2007). TQM and firms performance: An EFQM excellence model research based survey. *Int. J. Bus. Sci. Appl. Manage*, 2(2), 21-41.
- [23]. Saunila, M. & Ukko, J. (2012). A conceptual framework for the measurement of innovation capability and its effects. *Baltic J. Manage*, 7(4), 355-375.
- [24]. Scuotto, V., Santoro, G., Bresciani, S., & Del Giudice, M. (2017). Shifting intra-and inter-organizational innovation processes towards digital business: An empirical analysis of SMEs. *Creat. Innov. Manag.* 26(2017), 247-255.
- [25]. Shazad, F. (2014). Impact of organizational culture on employees' job performance. *International Journal of Commerce and Management*, 24(3), 219-227
- [26]. Teece, D.J. (2007). Explicating dynamic capabilities: The nature and micro-foundations of (sustainable) enterprise performance. *Strateg. Manage. J.*, 28(13), 1319-1350.
- [27]. Therrien, P., Doloreux, D., & Chamberlin, T. (2011). Innovation novelty and (commercial) performance in the service sector: a Canadian firm-level analysis. *Technovation*, 31, (2011), 655-665

****Corresponding Author: EGBERI, Agbarha Kelvin
Department of Business Administration and Management, School of Business Studies Delta State Polytechnic,
Ozoro, Delta State, Nigeria.***