

A CONCEPTUAL FRAMEWORK TO EVALUATE ROAD USERS' SATISFACTION OF GEORGE WALKER BUSH HIGHWAY, GHANA

Sheila Akakpo¹, Joshua Ayarkwa² and Kofi Agyekum³

^{1,2,3} *Department of Building Technology, Kwame Nkrumah University of Science and Technology, Kumasi, Ghana*
 akakposheila@gmail.com joshuaayarkwa@yahoo.com gyekum.kofi1@gmail.com

Abstract

The road infrastructure network in Ghana has received a massive growth over the years. Despite the efforts by the Government of Ghana to improve road infrastructure and services, road related problems still occur every now and then. There is growing recognition of the need to understand road user needs and concerns to deliver quality road services effectively and efficiently. The statement of the problem gives an indication that there are road users' satisfaction challenges on the George Walker Bush Highway in spite of the huge project investment made by the Government of Ghana and the Millennium Challenge Cooperation. Unfortunately, studies have shown that road users' satisfaction is still a new concept in Ghana. Using the SERVQUAL and Service Quality Gap models, a conceptual framework is proposed to evaluate the satisfaction levels of road users of the GWB-Highway.

Keywords: road users' satisfaction, road user needs, road infrastructure, quality road services

Introduction

The road transport system constitutes one of the key indicators of every national development, thus, facilitating the movement of people, goods and services for diverse purposes (Buerthey and Asare, 2014). The road infrastructure forms the backbone

on which a society is built. In Ghana, it forms an essential part of the Ghana Shared Growth and Development Agenda aimed at addressing infrastructure and human settlement challenges (Road Infrastructure Development Annual Report, 2011). According to the Ghana Investment Promotion Centre Report (2009), road transport in Ghana accounts for 94% and 97% of freights and passenger traffics respectively. Development in the road network has served as an important indicator for socio-economic growth throughout history. However, meeting the needs and expectations of road users for an improved road infrastructure delivery is still a growing concern for many governments and road agencies.

There is a traditional view that, the achievements of road sectors are mainly determined by the efficiency and fulfillment of the agencies' targeted goals as well as the quality of products and services they offer (Organization for Economic Co-operation and Development Transport Research, 2001). Nowadays, developing and maintaining road infrastructure as well as delivering the required quality by meeting set standards has become a critical part of everyday life. Subsequently, the focus of road agencies has been shifted more towards the need to provide adequate satisfaction to road users and other beneficiaries of road infrastructural developments than emphasizing solely on the product. Robinson et al. (1998) stated that, customer perceptions and concerns must define the goals of the road industry, especially, since the fulfillment of customer satisfaction is an essential

prerequisite for quality assessment which forms part of the ISO 9001:2008 standards.

This study focused on assessing the satisfaction levels of road users of the George Walker Bush Highway. Utilizing the right instruments for the required needs of the road sector as long as road users' satisfaction is concerned, can provide a significant deal of input for the road sector improvement as well as an enhanced service and product delivery system. Over the years, there has been a consistent emphasis on the need to prove that public institutions provide value for money by delivering services and products that meet customer needs and expectations (Ramdas et al., 2012). In the road sector for instance, road authorities conduct regular user satisfaction surveys mainly to evaluate user awareness and their satisfaction with the various aspects related to the management of road infrastructure. The surveys also serve as a measure used by road agencies in assessing their performance. However, preliminary investigations conducted in 2015 with the Ghana Highway Authority indicates that, unlike the road sectors in developed countries, road users' satisfaction is still a new concept in developing countries, especially, in Ghana.

Nature of Road Network in Ghana

Road infrastructure serves as the pivot for national development and in Ghana it forms part of the government's policy in ensuring that road transportation serves as a means to attain the goals set under the Growth and Poverty Reduction Strategy (GPRS III), as well as in attaining the middle income status by 2020 (MRH Annual Report, 2011). Earlier studies have shown that road transportation constitute the leading carrier of freights and passengers in Ghana. It has been estimated that road transport accounts for 94% of freights and about 97% of passengers, thus, creating the opportunities for people to access various economic and social resource centers (Ghana Investment Promotion Centre Annual Report,

2009).

The Ghana Highway Authority (GHA) under the Ministry of Roads and Highways is tasked with the responsibility for the planning, development, maintenance and administration of highway network in Ghana. The overall stretch of highway network across the country as of 2013 is about 14,536 km (Ghana Highway Authority Annual Report, 2014). The highways in Ghana have been categorized as National Roads, Regional Roads and Inter-Regional Roads (GHA Annual Report, 2014). The National roads are indicated with the prefix N, which link the National and Regional capitals. The National road is of strategic importance thus, linking the main arterial roads to neighbouring countries. The National roads are mainly designed for safer high-speed operations (GHA Annual Report, 2014). Inter-Regional roads are indicated with the letter IR. They are of inter-regional importance; thus providing an inter-regional coherence while the Regional roads prefix with R links the district capitals and major industrials such as, trade and tourist centers among others (GHA Annual Report, 2014). The functional and administrative classification of roads is essential for road management and policy operations. These classifications are important for the purposes of the allocation of jurisdictional responsibility, system planning, allocation of funds, and evaluation of road space needs, road designs, access management as well as in identifying road user needs and expectations (European Road Transport Research Advisory Council, 2010).

Background Study of George Walker Bush-Highway

George Walker Bush Highway (N1) is a 14-kilometer National route that begins at Tetteh-Quarshie interchange and ends at Mallam Junction. A National road that connects the Southern settlements of the country, from Aflao (Ghana-Togo border) to Elubo (Ghana-Cote d'ivoire border). The strategic location of the road network makes it a vital link

between the fast growing areas in the Greater Accra Metropolis through to the Tema Seaport and Kotoka International Airport, and to the final destinations of most agricultural produce branded for exportation (Millennium Challenge Cooperation, 2012). The stretch of the road functions as a highway through urban settlements, thus serving a multiple purpose functions. The road network is an asphaltic three lane dual carriageway with features such as 2 no. two lane service roads, interchange, six footbridges, three bus bays, twenty-three minor junctions, bicycle lanes and two transport terminals (Ministry of Roads and Highways, 2013). The improvement of the highway has enhanced the socio-economic development of the country significantly. These benefits according to the Ministry of Roads and Highways (2013) include the following:

- the highway serves as an important National route, Regional and Principal distributor that enhances trans-regional trades;
- the highway serves as a vital export link from Kotoka International Airport, Tema and Takoradi Harbours as well as to other business centers of the country; and
- the socio-economic activities along the road networks have also developed significantly with rapid development of commercial, residential and social amenities, and businesses.



Figure 1. The Road Map of Greater Accra Region (Source: Densu et al., 2013)

Theoretical Framework

The theoretical framework considered in this study dwells on the SERVQUAL and the Service Quality Gap instruments. Even though, these instruments are mainly utilized in the service industries, the research seeks to modify its application in the construction industries especially the road sector. The framework was modified to reflect the features of the road infrastructural service dimensions.

The SERVQUAL Model

Earlier studies have shown that, the model mostly used for evaluating satisfaction of customers and service quality is the SERVQUAL model. The model was developed by Parasuraman et al. (1988) to measure the satisfaction among customers (Parasuraman et al., 1994; 1988). According to the SERVQUAL model, the customer's expectations constitute the standard pertaining to which the consumer appraises the experience on the services received. Accordingly, the customer is fulfilled when the experience exceeds the standard and displeased when their experiences of service quality fall below the standard. The central focus of the model is to define service quality gaps by evaluating both perceptions and expectations of customers (Lotti, 1994). Consequently, researchers such as (Ramsaran-Fowdar, 2007; Buttle, 1996) have criticized the functionality of SERVQUAL model both on theoretical and operational grounds. Nonetheless, excessive emphasis has been placed on interaction at the expense of other service dimensions (Cronin and Taylor, 1992). The main challenges mentioned in most studies are the applicability of the five SERVQUAL dimensions to the various service settings. However, similar studies undertaken by other researchers could not provide a theoretical backing for the five-dimensional tool as was established by Parasuraman et al. (1994) in their development of SERVQUAL (Ramsaran-Fowdar, 2007). Similarly, the SERVQUAL model has received criticism for the addition of expectations as

a construct in evaluating service quality (Boulding et al., 1993). The disapproval commonly identified in most researches are based on the inconsistent relationship between satisfactions and perceived service quality (Duffy and Ketchard, 1998). However, a different model (SERVPERF) was later established with regards to the findings that service quality cannot solely be centered on expectations but can be directly evaluated by simple performance-based measurement of service quality (Cronin and Taylor, 1994). In spite of the on-going argument in literature, there is no doubt empirical evidences exist that suggest that SERVQUAL model remains the only robust model used by several service quality researchers in the evaluation of satisfaction of customers across different settings. Such researchers who based their studies on the SERVQUAL model include, Basri, 2009; Tyran and Ross, 2006; Zarita, 2006; Seiler, 2004; Sureschander et al., 2002; Hoffman and Bateson, 2001; Lim and Low, 1998; Stafford et al., 1998; Lee and Hing, 1995; Babakus and Glynn, 1992; Saleh and Ryan, 1991 among others making the model still useful and effective in the service industry. The SERVQUAL model is centered on five dimensions of service:

- Tangibility; this refers to the physical features related with the service encounter (Mohsin and Ryan, 2005). Churchill and Peter (1998) indicates that customers look for quality in the machinery, facilities and communication used to provide the service or product;
- Reliability; the ability of the service provider to deliver precise as well as reliable services; constantly carrying out the service appropriately (Bitner and Zeithaml, 2003; Kotler et al., 1999). Churchill and Peter (1998) added that customers desire consistent and reliable performance;
- Responsiveness; an organization's preparedness to support its consumers by offering quick and efficient service performance (Kotler et al., 1999; Bitner and Zeithaml, 2003). Additionally, customers expect to see the willingness and preparedness of service/product providers to perform (Churchill and Peter, 1998);

- Assurance; this refers to the different characteristics that provide confidence to consumers. Assurance indicates the understanding and consideration of employees and their ability to ensure trust and confidence (Bitner and Zeithaml, 2003; Kotler et al. 1999); and
- Empathy; an organization's willingness to offer each consumer with personal service (Halil and Kashif, 2005). Kotler et al. (1999), Bitner and Zeithaml (2003) added that companies and organizations must provide care and individualized devotion to the customer.

Service Quality Gap Model

The service quality gap model has been described as an extension of the SERVQUAL model that consists of seven main gaps in the service quality theory (Parasuraman et al., 1985). The service quality gap model incorporates the opinions of customer-organizational relationship. It is centered on fundamental study among several service providers in the service industries. In relation to the service quality gap model, this study focuses more on the perception gap (Gap 5) which comprises of the gap between road users' perception and expectation of the George Walker Bush highway. Figure 2 shows the service quality gap model.

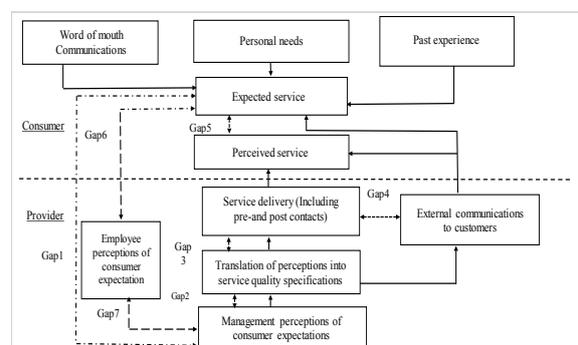


Figure 2. Service Quality Gap Model
(Source: Parasuraman et al., 1988)

The service quality gap model identified seven significant inconsistencies or gaps involving management opinions of service quality, and responsibilities attached to offering services to customers. Gap 1, Gap 2, Gap 3, Gap 4, Gap 6 and Gap 7 are considered as functions of how service is delivered, while Gap 5 relates to the customer, thus regarded as the exact assessment of service quality. Subsequently, prior researches in service quality have identified Gap 5 as one of the Gaps mainly influenced by the SERVQUAL methodology which basically indicate the differences that exist among customer expectations of service quality and customer perceptions of the institution's performance. The Gap model does not only provide a rigorous description of the significant factors of the Gaps but also outlines the key indicators for each gap. A summary of the generic breakdown of these indicators are provided in Table 1.

This extent of awareness permits useful exploration of the significant factors contributing to a perception gap at a practical level. The quality of a service perceived by customers will vary depending on the approach adopted by organizations in delivering and promoting those services (Gronroos, 1982). The service quality model by Gronroos (1982) proposes that the quality of service perceived by customers may be categorized into technical quality and functional quality dimensions. The technical quality refers to the fundamental condition for an absolutely perceived total quality, whereas, the functional quality presents a competitive edge (Gummesson and Gronroos, 1987).

Gaps	Key Indicators (Drivers)
	Insufficient market study orientation
Gap 1	Deficiency in upward communication
	Inadequate relationship focus
	Deficiency in customer focused ethics
Gap 2	Lack of service management
	Poor service strategy
	Lack of human resource strategies
Gap 3	Failure to match supply and demand
	Customers not fulfilling roles
	Inefficient management of customer expectations
Gap 4	Overpromising
	Insufficient horizontal communications

(Source: Zeithaml et al., 1990)

Conceptual Framework

The research centers mainly on the gap 5 of the Parasuraman et al. (1988) model, which was modified to assess the perception and expectation of road users. Parasuraman et al. (1988) proposes that the lesser the gap between the expected service and perceived service, the greater the satisfaction levels of service obtained. The conceptual framework for the purpose of this study adopted only three (3) of the dimensions developed by Parasuraman et al. (1988) in the SERVQUAL model. The two service dimensions, Tangibility and Empathy were excluded because their functionality cannot be applied to this study. The three (3) dimensions; Responsiveness, Assurance and Reliability represent the functional service quality dimensions provided by the road agency. The technical dimensions on the other hand, comprised of the physical features of the road infrastructure. According to Taylor and Baker (1994), the service quality dimensions differ from one institution to the other. Therefore, there is the need to incorporate new features based on generic and suitability of the service industries

under consideration. The conceptual framework postulate that the technical and functional service quality dimensions have a significant influence on the overall satisfaction of road users. Based on this assumption, a conceptual framework was developed by adopting and modifying the SERVQUAL and the Gap Service Quality instruments. The conceptual framework is illustrated in Figure 3.

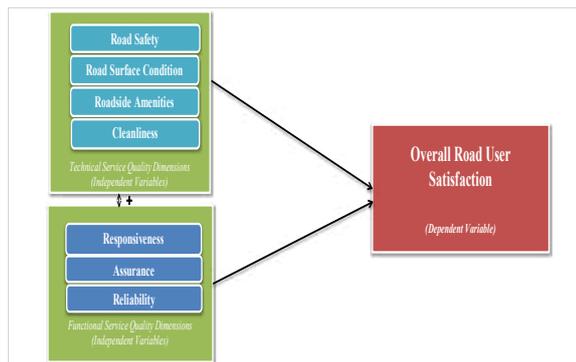


Figure 3. Conceptual Framework
(Source: Authors' construct, 2015)

The research framework proposes that there is significant relationship between the technical service quality dimensions and the overall satisfaction of road users. The framework also proposes that there is a significant relationship between the functional service quality dimensions and the overall satisfaction of road users. Unlike the road sector, the SERVQUAL and Gap Service Quality are mainly applicable in the service industries such as the Hotels Management (Saleh and Ryan, 1991), Restaurants Operations (Lee and Hing, 1995), Banks (Babakus and Glynn, 1992), Telecommunication Providers (Tyran and Ross, 2006; Sureschander et al., 2002; Hoffman and Bateson, 2001; Stafford et al., 1998) Properties (Zarita, 2006 and Seiler, 2004), Railway service (Lim and Low, 1998) among others. There is also an assumption that the road sector has no well-defined reliable and robust models for evaluating the satisfaction of road users (Suanmali et al., 2015; Ettema et al., 2013; Wardhana et al., 2011; Lodenius, 2011; Whigham, 2009; Basri, 2009.

Therefore, the modification of the SERVQUAL and Service Quality models provide a theoretical and empirical background based on which service dimensions (technical and functional service constructs) were improved and tested to reflect the indicators that influence satisfaction of road users of the GWB highway.

The Functional Construct defines the service dimensions as responsiveness, assurance and reliability modified based on the five dimensions in the SERVQUAL model. According to Zarita (2006), the five dimensions in the SERVQUAL model can be categorized as one aspect of the service quality dimension known as the Functional Construct.

The other aspect of the Service Quality Construct considered in the conceptual framework is the Technical Construct which looks at the physical features/evidence/environment of the road infrastructure. Zeithaml (2000) identified physical environment to comprise of the ambient conditions, spatial layout and functionality, signs, and symbols, artifacts. Subsequently, the satisfaction of road users is mainly influenced by several of these physical features/environments. According to Himachal Pradesh Works Department (2007), parking facilities and public toilets are the most relevant issues that can affect the satisfaction of road users. A similar study conducted by Wardhana et al. (2011) indicates that the road surfaces are significant features that affect road users in Saga, Japan. Road conditions, travel purpose, trip frequency and driving habits were the main influential indicators identified by Ettema et al. (2013). A survey conducted by the Karnataka State Highway Improvement Project (2004), also revealed that the average indicators of satisfaction were road surface condition, air and noise pollution. This review gives an indication that, the expectations of most road users are mainly formed based on the physical features/evidence/environment of the road infrastructure. Therefore, this study has combined and adopted the physical features/evidence/environment identified in previous

researches namely Road Safety, Road Surface Condition, Roadside Amenities and Cleanliness.

The revision of the SERVQUAL and Service Quality models included the addition of dimensions to reflect the satisfaction of road users and the highway management services. Thus the suggestion of the conceptual framework based on the above discussion is illustrated in Figure 3 above. Tables 2 and 3 below give the definitions of new features of functional quality and technical quality constructs used in evaluating motorists of GWB-highway.

Table 2 Functional Constructs and Service Dimensions used in the study

Functional Constructs	Service Quality Dimensions
Responsiveness	Willingness to address road users' needs
	Promptness in addressing road users' concerns
Assurance	Experienced staff at the road agency
	Considerate staff at the road agency
Reliability	Ability to implement planned road services consistently
	Ability to perform promised road services accurately

Table 3 Technical Constructs and Service Quality Dimensions used in the study

Technical Construct	Service Quality Dimensions
Road Safety	Street Lights
	Traffic control device
	Traffic Barriers
Road Surface Condition	Road Signage
	Non-defective road surface
	Free flow of run offs
Roadside Amenities	Noise pollution
	Air pollution
	Parking areas and bus stops
Cleanliness	Drainage structures
	Landscaping maintenance
	Service lanes
	Accessibility to social facilities
	Road surface
	Drains, culverts, etc.
	Footbridges
	Parking areas and bus stops

Conclusion

This study adopted and modified the SERVQUAL and Service Quality Gap Models by improving their applications in the delivery of road infrastructure services. The conceptual framework gives an indication that technical and functional constructs play crucial roles in the evaluation of the satisfaction of road users. Although, road infrastructure project designs may be unique, the significant features of the road that influence user satisfaction are identical among several roads. The framework presents road infrastructure indicators that can effectively measure and evaluate the performance of roads using George Walker Bush highway as a study project.

References

- Babakus, E. & Glym, M.W. (1992), 'Adapting the SERVQUAL scale to Hospital Services: An Empirical Investigation', Health Services Research, Vol. 26 No. 6, pp.767-786.
- Banks, J. & Kelly, G. (1997), California PATH Research Report: Traffic Management Systems Performance Measurement, California Partners for Advanced Transit and Highways (PATH), UC Berkeley, Berkeley, CA.
- Basri, M.S.B (2008). Customer Satisfaction: A Study on Highway Service Provider. A Thesis submitted to University of Malaysia.
- Bitner, M. J. & Zeithaml, V.A. (2003), Service Marketing, Third Edition. New Delhi Tata, McGraw Hill.
- Boulding, W., Kalra, A., Staelin, R. & Zeithaml, V.A. (1993), 'A Dynamic Process Model of Service Quality: From Expectations to Behavioral Intentions', Journal of Marketing Research, February, pp. 7 – 27.
- Buttle, F. (1996), Service quality in the construction industry. In: Proceedings of the 1st National Construction Marketing Conference, July, Oxford Brooks University, pp. 29-36.

- Churchill, G.A. & Peter, J.P. (1998), *Marketing: Creating Value for Customers*, Boston: Irwin/McGraw-Hill.
- Cronin, J. J. & Taylor, S.A. (1992), 'Measuring service quality: A re-examination and extension', *Journal of Marketing*, Vol. 56 No.3, pp. 55-68.
- Cronin, J.J. & Taylor, S.A. (1994), 'SERVPERF versus SERVQUAL: Reconciling performance-based and perceptions-minus-expectations measurement of service quality', *Journal of Marketing*, Vol. 58, pp. 125-131.
- Densu S.N., Salifu M. & Attafuaah, C. (2013), 'Road User Safety on the National Highway', *Civil and Environmental Research*, Vol. 6, No. 5.
- Ettema, D., Garling, T., Olsson, L.E., Friman, M. and Moerdijk, S. (2013). *The road to happiness: Measuring Dutch car driver satisfaction with travel*. *Transport Policy*. 27, pp. 171-178.
- European Road Transport Research Advisory Council Strategic Research Agenda (2010). *Towards a 50% more efficient road transport system by 2030. explain switching behavior*. *Journal of Business Research*. New York. 47(3); pp. 191.
- Ghana Highway Authority (2015), *Pedestrian Survey Data on the George Walker Bush Highway*. Planning Division, Ghana Highway Authority.
- Ghana Infrastructure Plan, GIP, (2012), *Consultants Group Meeting*. Retrieved from http://www.mofep.gov.gh/CG2015/userfiles/file/ghana_infrastructure.pdf on 07/11/15.
- Ghana Investment Promotion Centre (2009), *Annual Report*.
- Gronroos, C. (1982), *Strategic Management and Marketing in the Service Sector* Swedish School of Economics and Business Administration, Helsingfors.
- Gronroos, C. (2000), *Service Management and Marketing –a customer relationship management approach*. 2nd Edition. John Wiley and Sons, LTD.
- Gummesson, E. & Gronroos, C. (1987), *Quality of products and services: a tentative synthesis between two models*. Karlstad, Centre for Service Research, University of Karlstad, Research Report 87:3.
- Halil, N. & Kashif, H. (2005), 'Diagnosing the Zone of Tolerance for Hotel Services'. *Managing Service Quality*, Vol.15 No. 3, pp. 261.
- Himachal Pradesh Road and Other Infrastructure Development Corporation Ltd, (2007). *Road User Satisfaction Survey in the State of Himachal Pradesh*. New Delhi.
- Hoffman, D.L. & Bateson, J. (2001), *Essentials of services marketing: Concepts, strategies and cases*. Mason, OH: South-Western.
- Karnataka State Highway Improvement Project (KSHIP), (2004). PWD, Government of Karnataka. *Second Road User Satisfaction Survey in Karnataka*.
- Kotler, P., Armstrong, G., Saunders, J. & Wong, V. (1999), *Principles of Marketing 2nd European Edition*. Upper Saddle River: Prentice Hall Inc.
- Lee, Y. L. & Hing, N. (1995), 'Measuring quality in restaurant operations: an application of the SERVQUAL instrument', *International Journal of Hospitality Management*, Vol. 14, No. 3-4, pp. 293-310.
- Lim, K.K.P. & Low, J.K.Y. (1998), *A guide to common marine fishes of Singapore*. Singapore Science Centre.
- Lotti, L. (1994), *Markkinointitutkimuksen käsikirja*. 1st Edition. Porvoo, Finland: WSOY, pp. 261. ISBN 951-35-5864-9.

- Millennium Challenge Cooperation. (2012), *Success Story: From Road to a Highway*. U.S.A: Millennium Challenge Account.
- Ministry of Roads and Highways; Pilot Program Based Budget for 2013-2015, pp. 3-4.
- Mohsin, A. & Ryan, C. (2005), 'Service quality assessment of 4-star hotels in Darwin, Northern Territory', *Australia Journal of Hospitality and Tourism Management*, Vol. 12 No.1, pp. 25-36.
- Organization for Economic Co-operation and Development Transport Research. (1997), *Performance Indicators for the Road Sector*. Paris, France, pp. 16.
- Parasuraman, A., Zeithaml, V.A. & Berry, L.L. (1988), 'SERVQUAL: a multi-item scale for measuring consumer perceptions of the service quality', *Journal of Retailing*, Vol. 64 No. 1, pp. 12- 40.
- Parasuraman, A., Zeithaml, V.A. & Berry, L.L. (1994), 'Reassessment of expectations as a comparison standard in measuring service quality: implications for future research', *Journal of Marketing*, Vol. 58, pp. 111-124.
- Ramdas, K., Teisberg, E. O. & Tucker, A. (2012), *Redefining Service Delivery*. Harvard Business Review. Forthcoming.
- Ramsaran-Fowdar, R.R. (2007), 'Developing a service quality questionnaire for the hotel industry in Mauritius', *Journal of Vacation Marketing*, Vol. 13 No. 1, pp.19-27. doi:10.1177/1356766706071203.
- Road Infrastructure Development Annual Report (2011), Ministry of Roads and Highways (MRH) Publication, Ghana.
- Robinson, R., Danielson, U., & Snaith, M. (1998), *Road Maintenance Management: Concepts and Systems*. London: Macmillan Press Ltd. 289 pp.ISBN0-333-72155-1.
- Saleh, F. & Ryan, C. (1991), 'Analyzing service quality in the hospitality industry using the SERVQUAL model', *The Service Industries Journal*, Vol. 11 No. 3, pp. 324-343.
- Stafford, M.R., Stafford, T.F. & Wells, B.P. (1998), 'Determinants of service quality and satisfaction in the auto casualty claims process', *Journal of Services Marketing*, Vol. 12 No. 6, pp. 426-40.
- Sureshchandar, G.S., Rajendran, C. & Anantharaman, R.N. (2002), 'Determinants of customer perceived service quality: a confirmatory factor analysis approach', *Journal of Services Marketing*, Vol. 16 No. 1, pp. 9-34.
- Tyran, C.K. & Ross, S.C. (2006), 'Service quality expectations and perceptions: use of the SERVQUAL instrument for requirements analysis', *Issues in Information Systems*, Vol. 7 No. 1, pp. 357-62.
- Wardhana A.P., Ishibashi, K. and Kiyota, M. (2011). *Consideration of Road Management from the View Points of Long- And Short-Distance Road User's Satisfaction*. Civil Engineering Dimension, *Journal of Civil Engineering Science App.*, 13, Vol. 13, No. 2, pp.90-97
- Zarita, A.B. (2006), *PROPERTYQUAL: Assessing Property Management Service Quality of Office Building in Malaysia*. Research Thesis, Faculty of Architecture, Planning and Surveying, Universiti Teknologi Mara, Kuala Lumpur, Malaysia.
- Zeithaml, V.A. (2000). *Service quality, profitability, and the economic worth of customers: What we know and what we need to learn*. *Journal of the Academy of Marketing Science*, 2000, Vol. 28, No. 1, pp. 67.
- Zeithaml V.A., Parasuraman A. & Berry, L. L. (1990), *Delivering Quality Service; Balancing Customer Perception and Expectation*. The Free Press, New York, NY.