Abstract—The paper examines the influence of Internet Banking Service Quality (IBSQ) on Customer Satisfaction (CS) in the Ghanaian banking industry. The study was a cross-sectional survey that employed the use self-administered questionnaire to collect data from a sample of 200 respondents through personal contact. Through Structural Equation Modelling approach, the findings indicate that of the five IBSQ dimensions, web design factors have significantly positive influence on CS, explaining about 79.6% of CS with IBSQ. In spite of the limitations of the study, the findings offer important theoretical and managerial implications. The paper contributes to the literature in area of e-Service quality and customer satisfaction in electronic banking.

Index Terms—banking industry, Customer satisfaction, Ghana, e-service quality, internet banking, internet banking quality, service quality.

I. INTRODUCTION

Information and communications technologies (ICTs) have become an important tool that has revolutionised many areas of life including business and commerce. Information systems are now used in business to bring in new products, service market opportunities and developing more information system that is business oriented and supports management processes such as planning, controlling and co-ordination [1]. One of the areas that ICTs have impacted over the last decade is the banking industry. Most banks in developed and developing parts of the world are now offering internet banking services with various levels of sophistication as a competitive strategy [2], [3]. Banking is one of the services that are information intensive and an ideal centre for successful development of e-commerce because it provides the opportunity to use the internet and e-commerce to facilitate quick business transactions that results in customer satisfaction [4].

Banking started in Ghana in 1894 by the establishment of the Bank of British West Africa until 1957 [5]. According to the Ghana Banking Survey (GBS) currently there are 25 banks licensed to operate in Ghana [6], two of which are the banks under study. In Ghana, the deployment of ICTs in the banking industry has grown from one level of complexity to another since the government of Ghana established an ICT framework to facilitate the development of ICT in all sectors of the economy (ICT4AD, 2003). Aside the ICT4AD project, the government in collaboration with the private sector has initiated the e-zwich electronic payment platform in 2008 to facilitate business, competition and better delivery of services in the economy [6]. Currently, some banks like United Bank for Africa, Merchant Bank Ghana, ECOBANK Ghana, Barclays Bank Ghana, among others have adopted internet banking platform and a wide range of electronic products and transactions, some of which allow customers to receive their monthly bank statements via e-mail, online checking of accounts balance, online transfer of funds, the use of electronic cash systems, and for communicating to customers regarding bank statements, other banks use internet banking services to allow business customers to make inter-bank financial transactions and information sharing [7]-[9].

Competition in the Ghanaian banking industry is becoming keener as the more and more banking players enter the market. In response, many financial institutions are directing their strategies towards increasing customer satisfaction and loyalty through improved service quality [7]-[9]. Therefore, it becomes important for management of the banks to ensure that they deliver service quality that drives
customer satisfaction and loyalty [10]-[13]. Firms that provide superior service quality as measured by customer satisfaction also experience higher economic returns than competitors that are not so service-oriented [12]-[14].

Existing literature has focused on e-banking in Asian countries including Malaysia [15], Thailand [16] and India [17]. Few research that have contributed knowledge on Sub-Saharan Africa include a study on regulating Internet banking in Nigeria [18], on the determinants of Internet and cell-phone banking adoption in South Africa [19], an initial exploration in Ghana [8], [9]. Sub-Saharan Africa is a region in dire need of development and probably one with the greatest need of research attention in e-banking. In view of the many benefits that could accrue to Ghana from successful implementation of electronic business solutions, a study that focuses on such an under-researched part of the world would be very useful to practitioners and scholars. Very little is known regarding the relationship between internet banking service quality and customer satisfaction in the banking industry in Ghana. Therefore, more empirical studies in this area are needed to inform policy direction and further theoretical discourse regarding internet banking effects in developing country Sub-Saharan Africa context. In view of this, the main purpose of this paper is to examine the influence of internet banking service quality (IBSQ) on customer satisfaction (CS) in the Ghanaian banking industry (GBI).

II. LITERATURE REVIEW AND HYPOTHESES

A. Service Quality

Service quality (SQ) has received a great deal of attention in the marketing literature from both scholars and practitioners in business. Many studies have established that SQ is a crucial driver of satisfaction [11]-[13], profitability [10], and a key competitive advantage for modern business firms [11], [12], [20]. Indeed, SQ is not just a corporate offering, but a competitive weapon which is necessary for corporate profitability and survival [14]. SQ has been defined as the difference between customer expectations for service performance prior to service encounter and their perception of the service received [21]. Reference[22] defined SQ as the subjective comparison that customers make between the quality of service that they wish to receive and what they actually get.

Regarding the dimensions and aspects of SQ of firms, some past studies such as [11], [23] have established different conceptualizations of the SQ construct. This has resulted in different instruments for measuring SQ. Reference[11] maintains that SQ has both process and outcome dimensions that are critical to service context, which have been verified in some previous studies [23], [24]. Reference [23] develop the dimensions of SQ in their GAP and Extended GAP analyses based on which they developed the popular SERVQUAL model. The SERVQUAL model has been modified in many previous studies to suit a particular context. This has been noted by [23, p. 31] that the SERVQUAL instrument could be “adapted or supplemented to fit the characteristics or specific research needs of a particular organisation”. However, due to the differences between traditional service and electronic service, obviously SERVQUAL scale is not suitable for measuring SQ in electronic or internet environment due to the absence of staff, absence of traditional tangible elements, and self-service of customers [25]. It has been argued in many past studies that new scales need to be developed for e-service quality [25], [26].

B. E-service Quality

E-service has been an interesting and important area to scholars and practitioners alike. E-service has been defined as a web-based service or an interactive service that is delivered on the internet [3]. Reference[27] conceptualises e-service as deeds, efforts, or performances whose delivery is mediated by information technology. Generally, it can be defined as an interactive content-centered and internet-based customer service that is driven by customers and integrated with the support of technologies and systems offered by service providers, which aim at strengthening the customer-provider relationship. Given the technology quality dimensions of e-service quality that are different from the traditional service context, e-service quality has been regarded as having the potential to not only deliver strategic benefits but also to enhance operational efficiency and profitability [3].

A review of existing literature indicates that many past studies have found different dimensions for e-service quality that are useful for different research contexts [25], [26]. Reference[28] found the
following e-service quality aspects: site design, reliability, delivery, ease of use, enjoyment and control in the context of E-service. It has been found by [29] that ease of use, aesthetic design, processing speed, and security in online retailing are essential e-service qualities. Kim et al. [30] identified nine e-service quality items, being: efficiency, fulfillment, system availability, privacy, responsiveness, compensation, contact, information and graphic style in online retailing.

Recent studies show a combination of traditional SERVQUAL and the web-interface quality dimensions. Reference[25] proposed eight dimensions of e-service quality, which are: website design, reliability, responsiveness, security, fulfillment, personalization, information and empathy. Past studies on determinants of e-service quality adoption also indicate that e-service experience has impacted on customers’ perceptions and evaluation of e-service quality [31]. Reference [32] opine that the perceived web site quality and customer satisfaction is relevant to customers’ loyalty to the web site. In view of the above, e-service quality dimensions would be explored in the internet or e-banking context.

C. Internet Banking Service Quality

Internet banking could be conceptualized within the context of electronic banking. Though it has been variously defined, according to [33], electronic banking is the delivery of banks’ information and services by banks to customers via different delivery platforms that can be used with different terminal devices such as personal computer and mobile phone with browser or desktop software, telephone or digital television. Reference [34, p. 2] maintain that internet banking is situation where “customers can access their bank account via the internet using a PC or mobile phone and web-browser.” Internet banking has received considerable interest from scholars and practitioners as a result of the value and usefulness customers derive from internet banking, as well as the practical value of implications it offers marketers. A bank could enhance its reputation, customer retention, get new customers and increase financial performance by delivering superior quality internet banking services to its valued customers [35] - [37].

Reference [38] in an explorative study in Irish online banking context found ten dimensions of online retail banking, which are: web usability, security, information quality, access, trust, reliability, flexibility, responsiveness, self-recovery, and personalization/customization. In the empirical work of Ho and Lin [26] in an emerging economy of Taiwan Internet banking sector, they developed and validated a five dimension internet banking service quality with 17-item measurement scale for measuring the service quality in internet banking. The five emerged dimensions were based on e-service quality model of [32], namely: web design, customer service, assurance, preferential treatment and information provision.

First is Web design: This dimension covers the design of the web site and includes items like web content layout, content updating, navigability, and user-friendliness. These are consistent with findings of previous studies [39], [37], [40].

Second is Customer Service: Customer service has been recognized as an important element for enhancing service quality in online shopping and banking [3]. Elements in customer service dimension have been noted in many previous studies [41], [42]. This dimension has to do with service reliability, customer sensitivity, personalized service, and fast response to complaints that have been described as responsiveness to customer needs and complaints [23].

Third is Assurance: Many previous studies have demonstrated that assurance is one of the critical elements of online banking service quality [29], [42]. The assurance dimension describes impressions by the service providers that convey a sense of security and credibility [23]. Security and privacy are related items that affect the confidence to adopt online banking services [43].

Fourth is Preferential treatment: This is related to the added value of using internet banking services. Where customers perceive that the incentive of online banking is attractive then they would be more willing to use internet banking.

Fifth is Information provision: Information provision has become one of the key elements of online service quality as customer would need the right information that enables them complete online banking transactions successfully [25].

In this study, internet banking service quality is, thus, conceptualized as a construct with five dimensions that were identified in the empirical work of [25].
D. Customer Satisfaction

Customer satisfaction (CS) has become a major area of marketing that has received considerable publications from practitioners and scholars in the last two decades. CS has been recognized as an important element that drives customer retention, loyalty and post-purchase behavior of customers[10], [20], [44]. Many studies confirm that the measurement of CS regarding the service quality of firms is a necessary means by which organizations delve into the minds of its customers for useful feedback that could form the basis for effective marketing strategy [14]. Since firms exist to satisfy customers by meeting their requirements, it is crucial for banks that offer internet banking services to periodically and consistently measure the satisfaction of their customers. As the IBSQ delivery may influence CS it becomes important to study and understand which IBSQ dimensions are having significant influence on CS so as to inform management strategy.

Customer satisfaction has been defined in different context by different authors. According to reference [20, p.144] “Satisfaction is a person’s feeling of pleasure or disappointment resulting from comparing a product’s performance (outcome) in relation to his or her expectation.” While some authors perceive satisfaction as a cumulative, others view it as transactional. On the one hand from a transactional-specific perspective, CS is based on a one time, specific post-purchase evaluative judgement of a service encounter [45]. On the other hand, in the cumulative CS perspective, CS is conceptualised as an overall customer evaluation of a product or service based on purchase and consumption experiences over a time period[46]. It is argued that since cumulative satisfaction is based on a series of purchase and consumption experiences, it is more useful and reliable as a diagnostic and predictive tool than the transaction perspective that is based on a one-time purchase and consumption experience. Therefore, in this study, customer satisfaction is measured from the last twelve months of using internet banking facilities of the two banks, so CS is conceptualised as cumulative and adopts the definition of satisfaction given by [47] as operational definition in this paper: CS is “The process of customer overall subjective evaluation of the product/service quality against his/her expectation or desires over a time period.”

E. Influence of IBSQ on Customer Satisfaction

The fact that service quality of a firm has a positive influence on satisfaction of customers is well documented in the literature [11]-[14], [47]. Internet banking quality has also been found to be a driver of customer satisfaction in different service contexts [48], [49]. Improvement in the internet service quality could be made if customers’ satisfaction and perception of it and how IBSQ affects CS can be measured in the first place. Effective measurement the impact of IBSQ on customer satisfaction could be very useful in the allocation of resources based on critical factors and in the segmentation of customers in meeting their needs and wants [11]-[14]. However, it is a documented fact in the literature that different service context could induce unique and critical electronic service quality variables useful to the service context. As a result, current research keeps exploring the impact of IBSQ in different countries and industries. Therefore, this paper examines IBSQ and how it is related to customer satisfaction in a Sub-Sahara Africa country context for theoretical and managerial implications.

F. Research Model and Hypotheses

The research model for this study is presented in Figure 1. It depicts the framework of constructs and their interrelationships that address the main research purpose examined in this paper. It is based on the two main constructs of this study: customer satisfaction and internet banking service quality. Based on existing literature review, customer satisfaction is conceptualized as cumulative in this study in that it is based on a series of internet banking service encounter experiences at least for the past twelve months [46]. CS is measured using two items, overall satisfaction measure and expectation disconfirmation measure. The conceptual framework for this study adopts the dimensions of IBSQ identified in the work of [26]. This model was adopted for three reasons. First, the model was based on extensive literature review. Second, it was based on research in an emerging economy context, which is similar to the emerging economy of Ghana. Third, the dimensions in the model are validated empirically as applicable to internet banking context and not just general e-service quality context.
The study, therefore, sought to examine the extent to which these IBSQ items influence CS in the context of banking industry in a developing country, Ghana. These IBSQ dimensions are Web design, Customer service, Assurance, Preferential treatment and Information provision [26]. Therefore, based on the literature reviewed, we propose that IBSQ dimensions will have significantly positive influence on customer satisfaction, and specifically hypothesize that:

- **H1:** Web design will have positive influence on customer satisfaction.
- **H2:** Customer service will have significantly positive effect on customer satisfaction.
- **H3:** Assurance will have significantly positive effect on customer satisfaction.
- **H4:** Preferential treatment will have significantly positive effect on customer satisfaction.
- **H5:** Information provision will have significantly positive effect on customer satisfaction.

![Fig. 1 Research Model. It depicts the hypothesized relationships between IBSQ and satisfaction that will be tested.](image)

### III. METHODOLOGY

#### A. Population and dataset

The target population consists of internet banking customers of Ghana Commercial Bank Ltd. (GCB) and Merchant Bank Ghana Limited (MBG) who have used internet banking services for at least the past twelve months. Originally, the main two banks were chosen for a comparative study as a result of their unique differences in operational focus with similar internet banking platform. While GCB is mainly into tradition banking products (e.g. savings/current account) with little investment banking service, MBG is typically into investment banking products (e.g. Funds/Portfolio Management, Money Market Operations, Investor Search & Joint Venture Arrangement) as well as other specialist services (e.g. Registrar Services, and Corporate Finance & Advisory Services). As a result of the richness of the dataset, the present paper utilizes the same dataset to study how consumer evaluation of IBSQ affects their satisfaction using structural equation modelling approach for both managerial and theoretical implications.

#### B. Sampling

The dataset involved 200 conveniently sampled respondents, 100 from each sub-group. In selecting the 200 respondents, a purposive sampling method was used to consciously select customers who meet the criteria of having used internet banking services for the past twelve months.

#### C. Data Collection Instrument

A self-administered structured questionnaires was developed based on the literature reviewed to gain insight into customers’ satisfaction with internet banking service quality in GCB and MBG. The self-administered questionnaire contained three sections. Section one contained bio data of respondents – gender, age, education, income and marital status. Section two focused on CS and section three contained mainly five dimensions with 17 items for internet banking service quality dimensions developed by Ho and Lin (2010). Overall satisfaction with the internet banking service quality was measured by asking respondents to rate their satisfaction with IBSQ using a five-point satisfaction scale and five-point a disconfirmation scale: Much worse than expected (1), worse than expected
IV. DATA ANALYSIS

A. Data Analysis Methods

Data were analyzed using SPSS 16.0 for windows. Data was analyzed using SPSS version 16.0 and Amos version 18.0 to perform Confirmatory Factor Analysis (CFA) and Structural Equation Modelling (SEM) to test the hypothesized relationships among the constructs in the proposed model (Figure 1). SEM approach involves several methods such as covariance structure analysis, latent variable analysis, confirmatory factor analysis, path analysis, and linear structural relations analysis, and can estimate the interdependent, multiple regression equation simultaneously among different constructs [51]. In SEM, first the reliability and validity of the constructs are assessed, followed by assessment of model fitness and then the path coefficients of the hypothesized relationships.

B. Respondents’ Characteristics

The study involved respondents with varied background characteristics. In terms of gender, 51.8% of the respondents were males and 48.2% were females. 12.9% of the respondents were below 25 years and 38.1% were between 25 and 35 years, and 30.2% between 36 and 45 years respectively, while 16.5% and 2.2% were between 46 and 55 years and above respectively. This implies that majority of them were in the economically active population (25 – 45 years). All respondents were educated with majority of them, 79.1% having tertiary education, while 7.9% had Senior High School (SHS) and 12.9% had post-SHS education. In terms of monthly income, few of them, 2.9% earned below GH¢100, 33.1% earned between GH¢101 to GH¢500, while 27.3% and 18.7% earned between GH¢501 to GH¢1000 and GH¢1001 – 1500 respectively. 18% of them earned above GH¢1500. 64.7% of the respondents were married, 31.7% were single and 3.6% had other marital status. Finally, 55% of the respondents belonged to GCB while the rest 44.6 belonged to MBG.

C. Reliability

Reliability refers to the extent to which a measuring instrument yields consistent results under similar conditions [51]. It is judged by strong theoretical basis for all construct indicators, high factor loadings greater than or equal to 0.5 and high composite reliability (CR) value greater than or equal to 0.7 [51]. As mentioned earlier, all items in the model are derived from the literature, construct item reliability values are shown by the factor loadings (FL) presented in Table 2. Two items, one each of Customer Service and Assurance dimensions had FL lower than 0.5, so they were removed. The rest of the items as indicated in Table 2 have high factor loading above 0.05, implying that the individual items explain well the variances of the construct they represent. After the refinement of scale, from Table 2, the Cronbach alphas indicate values greater than 0.70 for each construct, implying acceptable level of reliability for each construct.

D. Construct Validity

Construct validity are assessed through convergent validity and discriminant validity [51]. Convergent validity could be assessed through item reliability, composite reliability, and the average variance extracted (AVE) [52]. As already demonstrated for item reliability in Table 2, the factor loadings of items to their respective constructs are strong providing evidence to support the convergent validity of the constructs measured [51], [52]. The composite reliability, which is a measure of internal consistency comparable to coefficient alpha [52], is above 0.70, implying acceptable level of reliability for each of constructs. Finally, convergent validity is judged to be adequate when AVE equals or exceeds 0.50. As shown in Table 3, all the AVE values in the diagonal are greater than 0.5 and the composite reliability (CR) are all above the recommended 0.70. Therefore, taken together, the
evidence from the high composite reliability values, high factor loadings, combined with high AVE estimates provide strong evidence in support of convergent validity.

E. Discriminant Validity

Discriminant validity refers to the extent to which the measure of a construct does not correlate with measures of other constructs, and thus measures the extent to which constructs are different. At the construct level, discriminant validity is considered adequate when the variance shared between a construct and any other constructs in the model (covariance) is less than the variance which that construct shares with its measures (AVE) [51]. As indicated in Table 3, the AVE estimates in the diagonal are greater than the covariance below the diagonal (inter-construct correlations), therefore, discriminant validity appears satisfactory at the construct level in the case of all constructs. This indicates that each construct shared more variance with its items than it does with other constructs. Since the results show good discriminant validity for the constructs, the constructs in the proposed research model are deemed to be adequate.

F. Model Goodness-of-fit

In using SEM, the structural model is expected to show a good model fit index before proceeding to examine the psychometric properties of the model. The usual method is the use of the chi-square method or the ratio of the chi-square to its degree of freedom, with a value less than 3 indicating acceptable fit [51], [53]. However, due to the fact that the chi-square of the default model could be affected by large sample size greater than 250, many researchers recommend a combination of several fitness indices for judging fitness of a structural model [51]. Several benchmarks for good-fit indices have been suggested by many scholars [51], [53] as shown in Table 4. Reference [51] advise that to provide strong evidence of good model fit, a combination of at least one absolute goodness-of-fit measure, one absolute badness-of-fit index, one incremental fit measure and one comparative fit index should be used.

In this study, as shown in Table 4, all the fit-indices are either very close to or better than their corresponding recommended values. Though the Chi-square to the degree of freedom (CMIN) shows a significant value (p = 0.000), the rest of the fit indices appear satisfactory: GFI = 0.886, AGF = 0.842, RMSR = 0.045, RMSEA = 0.076, NFI = 0.931, CFI = 0.952, PGF = 0.637. Therefore, there is good fit for the model. Thus, we proceed to examine the regression co-efficients for the estimated structural model.

<table>
<thead>
<tr>
<th>Code</th>
<th>Item</th>
<th>Alpha</th>
</tr>
</thead>
<tbody>
<tr>
<td>WD1</td>
<td>Easy completion of online transactions.</td>
<td>0.880</td>
</tr>
<tr>
<td>WD2</td>
<td>Easy logging on online portal.</td>
<td></td>
</tr>
<tr>
<td>WD3</td>
<td>Easy understanding which button to be clicked for the next step.</td>
<td></td>
</tr>
<tr>
<td>WD4</td>
<td>Helping customer to complete a transaction quickly.</td>
<td></td>
</tr>
<tr>
<td>CUS1</td>
<td>Sufficient and real time financial information provided by the internet banking portal site.</td>
<td>0.870</td>
</tr>
<tr>
<td>CUS2</td>
<td>Validity of the hyperlinks on the bank’s portal.</td>
<td></td>
</tr>
<tr>
<td>CUS3</td>
<td>Quickness of the Web page on bank’s portal site loading.</td>
<td></td>
</tr>
<tr>
<td>CUS4</td>
<td>Banking portal to perform service correctly at the first time.</td>
<td></td>
</tr>
<tr>
<td>Items</td>
<td>FL</td>
<td>α</td>
</tr>
<tr>
<td>-------</td>
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<td>----</td>
</tr>
<tr>
<td>CS</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Item 1</td>
<td>0.992</td>
<td></td>
</tr>
<tr>
<td>Item 2</td>
<td>0.973</td>
<td></td>
</tr>
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<td>WD</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Item 1</td>
<td>0.822</td>
<td>0.880</td>
</tr>
<tr>
<td>Item 2</td>
<td>0.780</td>
<td></td>
</tr>
<tr>
<td>Item 3</td>
<td>0.800</td>
<td></td>
</tr>
<tr>
<td>Item 4</td>
<td>0.809</td>
<td></td>
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<tr>
<td>CUS</td>
<td></td>
<td>0.852</td>
</tr>
<tr>
<td>Item 1</td>
<td>0.801</td>
<td></td>
</tr>
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<td>Item 2</td>
<td>0.648</td>
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<td>Item 3</td>
<td>0.620</td>
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<tr>
<td>Item 4</td>
<td>0.819</td>
<td>0.898</td>
</tr>
<tr>
<td>Item 5</td>
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<tr>
<td>AS</td>
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<td>0.792</td>
</tr>
<tr>
<td>Item 1</td>
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<td></td>
</tr>
<tr>
<td>Item 2</td>
<td>0.863</td>
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</tr>
<tr>
<td>PT</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Item 1</td>
<td>0.934</td>
<td>0.860</td>
</tr>
<tr>
<td>Item 2</td>
<td>0.844</td>
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<tr>
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<td>0.819</td>
</tr>
<tr>
<td>Item 1</td>
<td>0.850</td>
<td></td>
</tr>
<tr>
<td>Item 2</td>
<td>0.825</td>
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</tr>
</tbody>
</table>

Note: FL – Factor Loading; α – Cronbach alpha; CR – Composite reliability; SD – Standard deviation; X – Means.

Table 1 shows the measurement constructs, their indicators and their respective Cronbach alpha reliability values.

TABLE 2

FACTOR LOADINGS, RELIABILITY AND DESCRIPTIVES

CUS5 Prompt reception of responses to customer request.
CUS6 Internet banking system’s ability to guide customer to resolve problems

Assurance
AS1 Reliability and credibility of transactions on the banking portal.
AS2 Protection/security of customer transaction data...
AS3 Feeling of relief of customer to transact on internet banking

Preferential treatment
PT1 Offering preferentially lower fees/ rates and charges
PT2 Reasonability of the transaction fee for this banking portal site.

Information provision
IP1 Complete and sufficiency of the information…
IP2 Accuracy of the online transaction process of the bank.
### TABLE 3
AVE AND INTERCONSTRUCT CORRELATIONS

<table>
<thead>
<tr>
<th>Const.</th>
<th>CS</th>
<th>WD</th>
<th>CUS</th>
<th>AS</th>
<th>PT</th>
<th>IP</th>
</tr>
</thead>
<tbody>
<tr>
<td>CS</td>
<td>0.731</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>WD</td>
<td>0.365</td>
<td>0.601</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CUS</td>
<td>0.451</td>
<td>0.412</td>
<td>0.814</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>AS</td>
<td>0.320</td>
<td>0.281</td>
<td>0.385</td>
<td>0.603</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PT</td>
<td>0.527</td>
<td>0.417</td>
<td>0.826</td>
<td>0.394</td>
<td>0.883</td>
<td></td>
</tr>
<tr>
<td>IP</td>
<td>0.291</td>
<td>0.365</td>
<td>0.249</td>
<td>0.270</td>
<td>0.279</td>
<td>0.631</td>
</tr>
</tbody>
</table>

Note: The covariance are below the diagonal, AVE estimates are in diagonal;

### TABLE 4
MODEL GOODNESS-OF-FIT

<table>
<thead>
<tr>
<th>Goodness-of-fit Indices,</th>
<th>Bench-mark value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Absolute goodness of fit</strong></td>
<td></td>
</tr>
<tr>
<td>Chi-square (CMIN)</td>
<td>P &gt;0.05 0.000</td>
</tr>
<tr>
<td>Chi-square/degree of freedom</td>
<td>≤ 3 2.240</td>
</tr>
<tr>
<td>Goodness-of-fit Index (GFI)</td>
<td>≥ 0.90 0.886</td>
</tr>
<tr>
<td>Adjusted Goodness-of-fit (AGF)</td>
<td>≥ 0.80 0.842</td>
</tr>
<tr>
<td><strong>Absolute badness of fit</strong></td>
<td></td>
</tr>
<tr>
<td>Root Mean Square Residual (RMSR)</td>
<td>≤ 0.1 0.045</td>
</tr>
<tr>
<td>Root mean Square Error of Approximation (RMSEA)</td>
<td>≤ 0.08 0.076</td>
</tr>
<tr>
<td><strong>Incremental fit measure</strong></td>
<td></td>
</tr>
<tr>
<td>Normed Fit Index (NFI)</td>
<td>≥0.90 0.931</td>
</tr>
<tr>
<td>Comparative Fit Index (CFI)</td>
<td>≥ 0.90 0.952</td>
</tr>
<tr>
<td><strong>Parsimony fit measure</strong></td>
<td></td>
</tr>
<tr>
<td>Parsimony Goodness-of-Fit (PGF)</td>
<td>≥ 0.50 0.637</td>
</tr>
</tbody>
</table>

### G. Assessing Hypothesized Relationships

Table 5 and Figure 2 provide a summary of the results for testing the hypotheses and analysing the path co-efficients respectively. They show that all the hypotheses were not supported by the data, except one. Specifically, it indicates that Web design (WD) factors significantly influence CS (β = 0.796, p < 0.05), supporting hypothesis H1. Satisfaction is not influenced by the following dimensions, given a 0.05 significant value: Customer service (β = -0.558, p = 0.395), Assurance dimension (β = 0.265, p = 0.179), Preferential treatment (β = 0.490, p = 0.208), and Information provision (β = 0.004, p = 0.971). Thus, no support was found for hypotheses H2, H3 and H4 and H5 respectively.

Moreover, the results indicate that Web design factors influence CS by 79.6% in GBI context. The square multiple correlation (R-square) also indicates that, generally, the proposed model helps predict CS by 74.1% (R² = 0.741). Thus, 74.1% of the variances in CS could be explained by the proposed model in the research context.

### TABLE 5
RESULTS FOR HYPOTHESIS TESTING

<table>
<thead>
<tr>
<th>Hypothesized Path</th>
<th>Std.β</th>
<th>S.E.</th>
<th>C.R.</th>
<th>p-value</th>
<th>Rk</th>
</tr>
</thead>
<tbody>
<tr>
<td>H1 CS &lt;--- WD</td>
<td>.796</td>
<td>.337</td>
<td>2.875</td>
<td>.004*</td>
<td>S</td>
</tr>
</tbody>
</table>
V. DISCUSSION AND IMPLICATIONS

A. Theoretical Implications

The main aim of this paper was to determine the IBSQ factors that significantly drive CS in the Ghanaian banking industry. This paper, therefore, has validated a theoretical model predicting CS in e-banking context. The proposed model found one significant determinant of CS, which is Web design, having four factors such as easy completion of online transactions, easy logging on online portal, easy understanding which button to be clicked for the next step and helping customer to complete a transaction quickly. These are therefore, the four items that are critical drivers of CS of IBSQ in the GBI.

Theoretically, the paper adds to the general marketing and e-banking literature that CS could be influenced by aspects of IBSQ[32], [37], [48]. The study did not find support for four aspects of IBSQ, which are: Customer service, Assurance, Preferential treatment and Information provision.

The paper provides empirical evidence that not all IBSQ factors may significantly drive CS in every service context. The extent to which IBSQ factor will induce CS may depend on a number of factors ranging from technology readiness [54], individual user adoption level, level of ICT technical know-how, to the level of development of national e-banking platforms to enhance industry-wide delivery of quality electronic banking services and products, among others.

The finding that CS is significantly influenced by web design factors of IBSQ in the Ghanaian banking industry, should be understood in the context of adoption and innovation stage of internet banking in Ghana. In the Ghanaian banking industry, internet banking is still at the infant stage in Ghana, and its adoption is still relatively low. Therefore, most customers seem to be much more concerned about the basics in using e-banking – web design factors. Web design factors becomes the first issue of concern for most online users. This is because the value of the rest of the functions of internet banking services dependents, to a large extent, on the functionality of the web page, its links and the speed and user friendliness of the internet banking portal.

While the findings of this paper challenge those of previous studies that have found support for Customer service, Assurance, Preferential treatment and Information provision[25], [26], [32], it does not imply that those other IBSQ factors are not useful in the Ghanaian banking industry, rather they
imply that those factors should still be given attention as they operate together with web design factors in an integrative way. However, banking management should give much attention to web design factors in order to achieve higher levels of customer satisfaction with IBSQ, while the other factors are to be provided, at least at the minimum level.

B. Managerial Implications

This paper offers several implications and recommendations to management of electronic banks in general, and internet banks in particular. First, it was found that Web design has the strongest influence on CS. This implies that management should give more attention to web design factors and devote resources to providing excellent web design features that delivers high level of efficiency and functionality of internet banking portal that meet and exceed customers’ expectations.

In order to ensure that web design of the internet banking is effective and efficient for customer satisfaction, it is recommended that:

1. Internet banking portal should provide easy completion of online transactions. For easy completion of online transactions, management should ensure that there are simple instructions to guide users on how to use various banking services and online activities [55]. In addition to this, the site should have frequently asked questions [FAQs] function to help users with common questions such as online bank transfers, charges for online services, protecting passwords, privacy, security issues about online bank transaction, use of search facility, and other relevant information [56].

2. Internet banking portal site should provide easy logging on online portal. The internet banking portal should have effective log on system that is valid and easy for users to enter their user names and passwords. The log on features should be convenient to users and should not be difficult for users to be verified using their user identifications and credentials before being able to do their online banking transaction [57].

3. Internet banking web site should provide easy understanding to customers of which button to be clicked for the next step. The management should ensure that web site designers ensure that the links provided customers on the site are valid, and ensure user-friendly background characteristics such as colour, legibility, readability, and easy to identify and control buttons [55], [56]. This is because ease of navigation enhances user efficiency and re-use behaviour [56].

4. Internet banking site should be able to help customer to complete a transaction quickly. Online transactions should provide competitive advantage by enabling consumers to complete transactions quickly and faster than offline transactions [2], [4], [25], [26], [38], [55]. This means that management should ensure that internet banking portals are enhanced with greater bandwidth for greater speed for browsing, and quick opening of web pages for online transactions. Thus, it should not take too much time for web pages to open for users to do their online banking transaction [57].

VI. CONCLUSION AND LIMITATIONS

In conclusion, the purpose of the study was to empirically examine the influence of IBSQ factors on CS in Ghanaian banking industry. The paper concludes that within Ghanaian banking industry, web design factors significantly influences CS and that the rest of the IBSQ identified in the literature may not significantly linked to CS in the research context, given the relatively infant stage of internet banking development in Ghana and the low level of its adoption.

The findings of this paper should be interpreted within its limitations. First, the study included respondents from only two well established internet banking firms in Ghana. As the banking industry in Ghana matures, it might be that other IBSQ factors might become critical in determining CS. Therefore, future research should widen the scope of the study in terms of the sample size and its composition and the factors of IBSQ to include. This should provide deeper empirical insight on IBSQ and CS linkage and compare the results with those found in this paper and previous studies to enhance the theoretical discourse on IBSQ in banking industry in developing counties.
REFERENCES


