Examining the Role of Website Quality Perceptions in Explaining the Actual Usage of a Port Paperless System (PPS)

James Yaw Osei-Owusu[1,2], Rosli Mahmood[3], Murali Sambasivan[4]

[1]Putra Business School, Malaysia, [2]Koforidua Technical University, [3]Ghana, Putra Business School, Malaysia, [4]Thiagari Management School, India.

Abstract
The main objective of these study is to proposed a model and integrate it with website quality dimensions to study and as well as measure the direct relationship between the intentions of the users of the ports in Ghana and their actual usage of the port paperless system (PPS). Through the survey design technique, data was collected from the users of the ports in Ghana. The study adopted a Research Randomizer to select 424 port users in Ghana and the questionnaires were distributed through self - administered technique. A total of 332 questionnaires were received, giving a response rate of 78 percent. The hypotheses of the study were tested using the Partial Least Squares- Structural Equation Modeling (PLS- SEM) statistical technique. The findings of the study revealed that perceived usefulness (PU), perceived ease of use (PEOU) and as well as Technical quality (TQ) and specific con tent quality (SCQ) are important factors that influence intention to used PPS in Ghana. The facilitating condition (FC) and behavioural intention (BI) variables are confirmed in the study to individually influence actual usage(AU) of the PPS in Ghana. This study has contributed to the growing literature of IT/ IS especially in the context of Africa where there seems to be limited literature because we have developed a model fused with some component of the TAM model and dimensions of website quality to study an online port policy. The study has also developed a new dimension of website quality known as Cost Associated with the web (CAW) and this has been validated in the study.
Keywords: Examining, Website Quality, Perceptions, Actual Usage, Port Paperless System (PPS).

Introduction
Website quality is currently one area of study that is undergoing numerous expansion and providing an enabling environment and opportunity for researchers to explore and table their findings (Morales-Vargas, Pedraza-Jiménez and Codina**,** 2020). Subsequently, a lot of

individuals have taken advantage of this grey area to table their research work and findings. Aladwani (2006) for instance on testing the relationship between the perceptions of website quality and online customers on future business homogenization, failed to test the direct relationship between intentions and actual usage of the website. Additionally, a comprehensive review of literature done by Aladwani (2006) on the above-mentioned topic concludes that none of the review done statistically tested the link between an amalgamated model of website quality and the buying behavior of web users. The above statements confirm the earlier propositions that the concept of the web quality remains underdeveloped and is also a vastly under defined concept. It additionally confirms earlier research that most studies on website quality perceptions do not capture website users but mostly center on practitioners, designers, and managers of website (Aladwani and Plavia, 2002).

To fill this void, this study adopts the TAM model with some modifications and integrates it with the website quality perceptions proposed by Aladwani and Plavia (2002) to study and as well as measure the direct relationship between the intentions of the users of the ports in Ghana and their actual usage of the port paperless system (PPS).

The problem with the ports of Ghana since time immemorial is that they have been embarking on numerous port reforms vigorously since 1990 with the aim of curtailing and abolishing issues of corruption, bribery, delay in clearance of goods, bureaucracy and lack of transparency (Osei-Owusu, Mahmood, Sambasivan, 2020; Athenja, Nsoh and Obeng, 2020). Nevertheless, these reforms have always had their own challenges thus making the above-mentioned port challenge to continuously persist.

What we know is that Ghana has been able to introduce a paperless system for clearing goods at her ports since September 1, 2017. What we additionally also know is that the first month of introducing the port paperless in Ghana, Ports revenue increased by 56% compared to revenue received same month in previous year (Daily Graphic Paper of Thursday, September 7th, 2017).

It is important to know the above mentioned facts because concepts such as the quality of the website of the PPS in terms of security, speed, colour, font size and many others have played a significant role in ensuring the success of the PPS. As opined by Straub and Watson (2001), the attributes associated with websites are very essential in the sense that they are key in promoting the businesses conducted online.

There is a positive correlation between the quality of a website and satisfaction from users and most often than not this link has an impact on actual usage of services transmitted online (Zhong and Ying, 2008) Therefore, the intriguing question is: Can the quality of the PPS website in Ghana and the intentions from its users result in actual usage of the PPS?

The objectives of the study are;

- To determine how PU and PEOU can influence BI in explaining the actual usage of the PPS.
- To determine how AQ and TQ can influence BI in explaining the actual usage of the PPS.
- To determine how GCQ, SCQ and CAW can influence BI in explaining the actual usage of the PPS.
- To examine how FC can influence actual usage of the PPS.
- To examine how BI can influence actual usage of the PPS.

Subsequently, this study aims at delving into answering the above-mentioned question. As our contribution to this study, we have introduced another dimension of website quality

known as cost associated with the web (CAW) and this offer both users and designers of a web the opportunity to assess the cost associated with using a particular web in addition to the four widely known and proposed website quality dimensions by (Aladwani and Plavia, 2002).

Secondly, our study is one of the few developed to test the direct relationship between intentions and actual usage of a website particularly in the shipping industry. Previous studies conducted by (Aladwani, 2006; Aladwani and Plavia, 2002) failed to show the above-mentioned relationship.

Thirdly, our study is also one of the few to comprehensively assess website quality infused with the components of a technological model to test the direct relationship between intentions and actual usage of a website. Most technological studies (Osei-Owusu et al, 2020; Alshehri, 2012; Sambasivan, Wemys and Che, 2010) have combined some of the perceptions of website quality and most often than not studied it as a construct.

Finally, we are conducting this study in Ghana, a fast-developing country in the Sub-Sahara Africa and it is the first ever in Ghana since the inception of the PPS to comprehensively propose a model to acknowledge the direct relationship between the intentions of the users of Ghana's port and their actual usage of the PPS with a significant role of website quality attributes. The next section discusses relevant literature related to the significance of website quality and technology acceptance. This is followed by the research model and hypotheses culminating into the conceptual frame work of the study. The methodology is next followed by results and discussion and finally the conclusion of the study which throws more light on the theoretical and practical implications of the study and recommendations for future study.

Literature Review
Significance of Website Quality

An organization with a website that is not easy to navigate and interact leads to impoverished image displayed on the internet and thus weakens the organizations strength online (Barnes and Vidgen, 2002). Semerádová and Weinlich (2020) have opined that in spite of the many studies attributed to the concept of website quality, a homogeneous definition of the concept is yet to be formalized, subsequently, Morales-Vargas, Pedraza-Jiménez and Codina, (2020) defined website quality as the capacity of a website to adhere to the needs and aspirations of both designers and users in relation to a set of quantifiable parameters. The terms website, web design and web quality are mostly used interchangeably to connote the same thing, however the dichotomy between the above-mentioned terminologies are mostly seen in situations where website quality is defined with multiple dimensions. The dichotomy is not seen where website quality is defined as a uniconstruct.

One common thing about past research on website quality is that it has been defined with multiple dimensions (Zhong and Ying, 2008; Aladwani, 2006; Delone and Mclean, 2003; Aladwani and Plavia, 2002). There are also situations where website quality is defined as a uniconstruct (Osei-Owusu, et al, 2020; Alshehri, 2012) and in such a case the components of the various website quality are not seen. Additionally, past research on website quality has alluded the factor as very important for achieving customer satisfaction and user satisfaction (Zhong and Ying, 2008, Schaupp, Fan and Belanger, 2006; Floh and Treiblmaire, 2006; Lin and Lu, 2000).

Furthermore, past studies on website quality have infused some of the attributes of service quality proposed by Parasuraman (1998) into their explanation (Delone and Mclean, 2003; Sambasivan, Wemys and Che, 2010). Some studies on website quality have shown a

correlation between behavioural intention (BI) and actual usage (Al-Qeisi, 2015; Sambasivan et al, 2010).

To epitomize from the above literature on website quality, what is lacking on almost all past research work is that either a few or none have adopted it as a variable to explain any port situation. The PPS is an online platform powered by internet provided by Ghana link. Therefore, the website quality of the software in terms of font size, designs, colour and instructions are very important to attract regular usage by customers and subsequent adoption. Additionally, professional work done on the website such as regular updates, attractiveness, security, and availability will go a long way to enhance the regular user patronage and customer satisfaction.

The Technology Acceptance Model (TAM)

The technology acceptance model was propounded by Davis (1989) as a modification to the theory of reasoned action (TRA) propounded by Ajzen and Fisbein (1980). In the TAM model, Davis (1989) substituted 'attitude beliefs' from the TRA model with two new technological constructs namely, perceived usefulness (PU) and perceived ease of use (PEOU). PU is defined as "the degree to which a person's beliefs using a particular system would enhance his or her performance" (Davis, 1989, p.30) and PEOU is defined as "the degree to which a person believes that using a particular system would be free of effort" (Davis, 1989, p.30).

TAM was basically developed to assist persons understand the reasons behind users' acceptance of a particular technology and eventual usage of that technology, and ascertain the factors that may influence the processes involved. PC use is controlled by expectation, which is seen as being together dictated by the individual's frame of mind towards utilizing the framework and its apparent helpfulness. In the view of Davis et al., (2003), the connection between usefulness and intention suggests that the individual trusts that his or her activity execution is upgraded, paying little attention to positive or negative emotions. In the proposed TAM model, subjective norms (SN) of TRA is excluded as a determining factor of BI. In the view of Davis (1996), objective system, design characteristics, training, computer self – efficacy, user involvement in design and the nature of the implementation process depicts external variables in the TAM model. Subsequently, as TAM kept on advancing, new factors were presented as external factors influencing PU, PEOU, BI and actual use or behaviour. In the view of Lee, Kozar, and Larsen (2003), system quality, compatibility, computer anxiety, enjoyment, computing support and experience are dominantly used. The connection between TAM's four noteworthy factors (PU, PEOU, BI and B) is conjectured to utilize PU as both a dependent variable influencing BI directly; and as an autonomous independent variable, since it is anticipated by PEOU. Actual Use or Behavior is normally estimated by measure of time utilization, recurrence of utilization, real number of uses and assorted variety of use. TAM has become a remarkable model in forecasting and examining usage between a cross section of frameworks.

Research Model and Hypotheses

Many studies related to IS/IT have adopted the TAM model. For example, Al-Qeisi, (2015), Sambasivan et al (2010); Davis et al (1989). Likewise, others have also adopted the website quality dimensions (Aladwani, 2006; Aladwani and Plavia, 2002) to explain some IS / IT research studies. However, combining the TAM model with website quality dimensions holistically to explain any IS / IT situation has not been given much recognition, especially in the shipping industry. The model for this study is a combination of both the TAM model

developed by Davis et al (1989); Davis (1989) and website quality dimensions developed by Aladwani, (2006); Aladwani and Plavia (2002) to explain a port paperless situation within the context of a developing country. Refer to figure1 below for the conceptual model of this study which is a combination of both the TAM model and website quality dimensions

Figure 1: Research model (Conceptual framework)
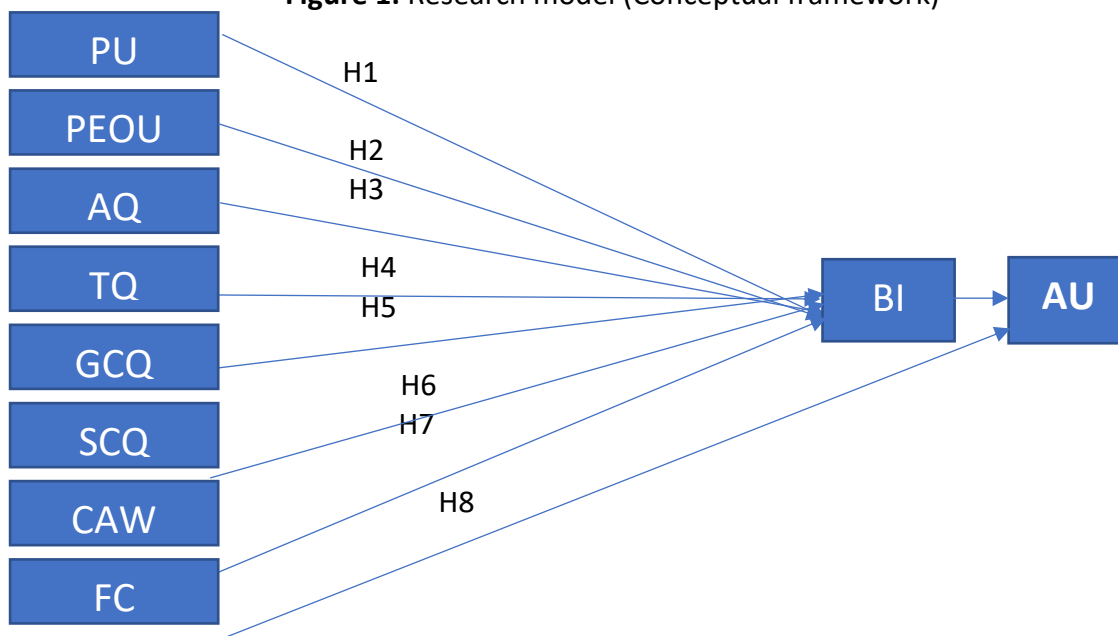
KEY
PU - Perceived Usefulness
PEOU- Perceived Ease of Use
AQ- Appearance Quality
TQ- Technical Quality
GCQ- General Content Quality
SCQ- Specific Content Quality
CAW- Cost Associated with the Web
FC- Facilitating Condition
BI- Behavioral Intention
AU- Actual Usage

Perceived Usefulness (PU)
PU is the propensity that individuals or a group of people believe adhering to a specific system would enhance their job performance (Davis et al, 1989). The PU construct in the context of the PPS is very important in the sense that the PPS is currently regarded as the most effective and modernized reform of all port reforms in Ghana used for clearing goods at the ports in Ghana. Before going paperless, it would take about more than a week before one could clear goods from the ports in Ghana, the PPS is expected to reduce the clearing time to barely 24 hours. The users of the ports in Ghana can process their documents for clearance without wasting time and this has helped to increase productivity. It is an undisputable fact that greater productivity will be enhanced from using the PPS since intention to use and actual usage behavior will be extremely high under the PPS. Scholars such as (Wiafe et al, 2019; Venkatesh, Morris and Davis, 2003; Venkatesh and Davis, 2000; Davis, et al 1989) have all shown in their respective work that the perceived usefulness variable is a stronger predictor of intention to use a new system in both mandatory and voluntary environments. The PPS is

operated in a mandatory environment, subsequently based on the arguments advanced above the hypotheses related to the PU variable is posited as**:**

H₁. PU has a positive impact on an individual's BI to use the PPS within the shipping industry in Ghana.

Perceived Ease of Use (PEOU)

According to Davis et al (1989), perceived ease of use is defined as the propensity associated with an individual's belief or the belief of a group of people using a specific system which comes without much difficulty. In other words, PEOU refers to the ease of use associated with the use of a particular system. The PEOU variable is the same as effort expectancy in the UTAUT model. It is equally the same variable in the combined TAM & TPB and in Decomposed Theory of Planned Behaviour (DTPB) as perceived ease of use and also known as complexity in both Innovation Diffusion Theory (IDT) and Model of PC utilization (MPCU). An assessment of the effort associated with the use of a particular system is usually attributed to the perceived ease of use variable and it is usually calculated based on how simple and comprehensive the usage of a particular system is, less difficulty and mentality associated with getting a system to do what one intends to have it done (Davis, et al, 1989). In the context of this study, if the users of Ghana's port perceive that using the PPS is easy and less difficult to use, then subsequently intention to use is fortified leading to more people using the system. The relationship between perceived ease of use and intention to use a particular system has been outlined by many scholars (Wiafe et al, 2019; Davis et al, 1989) and in all cases the results have been inconclusive. Therefore, owning to the inconclusiveness associated with the link between the PEOU and intention to use, there is the need to further interrogate this relationship in the shipping industry. Subsequently, the hypothesis related to the PEOU variable is posited as;

H₂. PEOU has a positive impact on an individual's BI to use the PPS within the shipping industry in Ghana.

Appearance Quality (AQ)

According to Aladwani (2006), technical and content qualities should not be only what a website should be centered on, appearance quality is also very essential for any organization to be able to attract customers and influence their intentions of patronizing a particular web service. This in effect means for the PPS introduced in Ghana to attract customers and influence their intentions to always patronize its usage, there is the need for the government of Ghana and the owners of the port in Ghana (GPHA) to pay attention to the appearance quality of the PPS in addition to the technical and content attributes of the PPS. Various appearance quality attributes such as proper use of fonts and colours, organization, proper use of multimedia and attractiveness have been alluded by some research scholars such as Aladwani and Plavia (2002), Alsheri (2010) as very significant parameter of website quality that could go a long way to facilitate the use of a particular website and possibly attract users and even sustain them. From the discussion, it is obvious that for Ghana's PPS to be able to attract potential users and sustain them, there is the need to ensure that attributes of the PPS are blended with not only technical and content qualities but also that of appearance as well. Subsequently, the hypothesis related to the appearance quality variable is posited as:

H₃. AQ has a positive impact on an individual BI to use the PPS within the shipping industry in Ghana.

Technical Quality (TQ)

According to Aladwani (2006), a website that is made of menial technical qualities may not be able to attract prospective customers. This low technical attribute will push such prospective customers to other websites. This implies that technical qualities of a website are a necessary factor to attract potential customers and users. According to Straub and Watson (2001), the attributes of a website are very essential because they are the basic means of facilitating any business done online. One important factor that has attracted a lot of people in harnessing the PPS in Ghana is security. This has been opined by Aladwani (2006) who asserted that security is the number one hindrance to the use of all online requisition. In the context of PPS, effective technical web quality is an essential important factor that ensures continued usage of PPS for port activities. Therefore, to ensure effective use of the PPS in an online environment, technical attributes such as security and ease of navigation, search facilities and site availability, valid links and personalization or customization, interactivity and ease of use are very essential and critical for companies using electronic platform (Aladwani and Plavia, 2002). In view of the arguments advanced above, the research hypotheses related to the TQ variable is posited as:

H₄. *TQ has a positive impact on an individual's BI to use the PPS within the shipping industry in Ghana.*

General Content Quality (GCQ)

Misic and Johnson (1992) and many others such as (Bell and Tang, 1998; Liu and Arnett, 2000) have all reiterated in their various respective studies that developing a website infused with inferior general content quality is worthless because it will not be able to attract prospective customers to the website. According to Aladwani (2006), if a website does not have what it takes to attract potential customers' expectations in relation to seeking information and other vital general content quality attributes of an electronic platform, then this may push them away to other existing electronic platforms. Content quality or clarity has been found to be one of the essential attributes of general content quality in most online platforms (Song and Zahedi, 2001; Gefen and Straub, 2000). Ghana's PPS is an online website powered by the internet and therefore for it to gain regular usage and attraction from potential customers, the content clarity coupled with its usefulness and completeness as well as currency conscientiousness and accuracy (Aladwani and Plavia, 2002) are necessary to ensure regular patronage and usage of the PPS.

Subsequently, this study hypothesis the GCQ variable associated with the study as.

H₅. *GCQ has a positive impact on an individual's BI to use the PPS within the shipping industry in Ghana.*

Specific Content Quality (SCQ)

Liu, Arnett, Capella, and Taylor (2001) opine that the essential parameters of a web design are system quality, information quality and service quality. Similarly, Aladwani (2006) postulates that a website serves as source of information about an organization to attract potential web users. Deducing from the above statement, it is obvious that for the PPS introduced in Ghana to attract users, the information put on the PPS website is very essential. Aladwani and Plavia (2002) also opine that for a website to be able to attract prospective users, that website should be able to relate information about its operations, services, and activities as well as user contacts and other enhanced information to support users. Seeking for information on the internet about a particular product is one of the topmost important parameters to facilitate any electronic transaction behavior (Bellman, Lohse, and Johnson,

1999). The PPS is an online activity and therefore, for it to able to attract prospective and regular users then specific content quality attributes alluded by Aladwani and Plavia (2002) such as general content information, service or product details and support and policies for customers are very essential and necessary. Subsequently, the research hypothesis related to the specific content equality variable with be posited as,

H6. *SCQ has a positive impact on an individual's BI to use the PPS within the shipping industry in Ghana.*

Cost Associated with The Web (CAW)

Cost can be defined as the expenditure incurred on assembling or combining factors of productions to produce goods and services i.e., the expenditure incurred on the production of a given quantity of goods and services. It can sometimes be defined as anything that must be given up to obtain another thing (Appiah, 2005).

In the context of this study, cost is defined in two dimensions; one as the total expenditure incurred by the authorities of the ports in Ghana in introducing the port paperless system and secondly, the cost incurred by users in using the port paperless system for their port transactions.

Most research studies (Aladwani, 2006; Aladwani and Plavia, 2002) on website quality have failed to acknowledge the cost users incur in using a particular web service. This study acknowledges this deficiency and in addition attempts to delve into the cost producers or manufacturers may encounter in introducing a particular web for an online activity. As opined by (Almoradie, Cortes and Jonoski, 2015), in this era of globalization coupled with rigorous competition and consumer assertiveness for prompt services, users can never be ignored, since they are considered as important stakeholders. Subsequently, in this study cost associated with the web by both producers and users will be assessed in the following areas: cost effectiveness, cost utilization, cost benefit and cost actualization. There are pros and cons associated with cost assessment. Hence based on the above arguments about cost associated with the web, the hypotheses related to the CAW is posited as:

H7. *CAW has a positive impact on an individual's BI to use the PPS within the shipping industry at Ghana.*

Facilitating Conditions (FC)

FC refer to the resources that exist in an organization to support the day-to-day administration and functioning of structures and systems. In this study, facilitating conditions basically refer to the technical and organizational infrastructure to support use of the port paperless system. The FC as a construct is relatively the same in many other technological constructs. For example, it is the same as perceived behavioural control in the combined TAM-TPB and also same as compatibility in IDT. Interestingly it is referred to as facilitating conditions in both DTPB/ TPB and MPCU. In both UTAUT 1 and 2 proposed by both Venkatesh et al, (2003) and Venkatesh et al, (2012), the effect of the FC construct is on both the BI and AU variables, the results are said to be the same, irrespective of the context. That is FC→BI < 0.05 or FC →AU < 0.05, therefore, to conclude the effect of the FC construct can either be on both the BI or the AU variable, this is because statistically they have been proven to generate or yield the same results in both UTAUT 1 and 2. In this study the effect of the FC variable is shown on the AU construct denoting a typical UTAUT 1 scenario. The FC variable has also been used in many IS/IT research and in all situations the results have been mixed. Subsequently, this study deemed it very necessary to further interrogate this relationship within the ports

and harbor sector where in the view of Wiafe, Koranteng, Tettey, Kastriku, & Abdulai (2019) there is scanty literature. The hypothesis related to this construct is hypothesized as
H8. *FC has a positive impact on an individual's BI to use the PPS within the shipping industry in Ghana.*

Behavioural Intention (BI)

Technology adoption basically refers to the decision taken by an individual to use or reject online services. The BI construct is very essential in illustrating the embracement of a new technology and subsequently when one deems the use of a particular technology to be convenient, a positive behavioural intention is developed towards the use of that technology (Ajzen, 1991).

As opined by Venkatesh et al (2010), BI is mostly the ease associated with performance or non-performance of a particular action owing to a purposeful mindset developed by an individual. The BI construct is denoted as attitude in TRA, behaviour in SCT and as intention in TAM and IDT. Intentions are usually formed before the final decision as to using a particular system or not. It is therefore for this reason that Ajzen (1991) emphatically mentions BI as an essential factor leading to the adoption of a new system or technology. In this study, it is expected that when the port users in Ghana find the PPS useful, then they will develop a positive mindset towards its adoption and subsequently its actual usage. Behavioral intention determines the actual usage of a particular technology (Davis et al, 1989). The hypothesis therefore associated with the BI constructs is hypothesized as:
H9. *BI to use PPS has a positive impact on an individual's actual usage of PPS within the shipping industry in Ghana.*

Methodology

The ports of Ghana are a very restricted area or zone, hence in order to get access to administer questionnaires and obtain data, an official letter was written and sent to the Human Resource (HR) department of Ghana Ports and Harbour Authority (GPHA). A similar letter was also sent to some selected shipping companies located within the catchment area of Tema port as well as some selected freight forwarders offices located in the Tema shipment area. The sampling frame used for the study was self-administered questionnaire. The sampling frame for the study was obtained from all the above-mentioned entities and in all the frame listed 1660 users across the different mentioned authorities. A random number generated from the internet, Research Randomizer (Urbaniak, 1997) was subsequently used to randomly select 425 users and the questionnaire was sent to all the selected users. In all a total of 332 questionnaires (response rate – 78 percent) were collected and subsequently used for all further analysis with the aid of the smart partial least squares (SPLS) software. Table 1 below depicts a detailed analysis of the characteristics of the respondents.

Development of Measures and Pre-test

The questionnaire for the study is made up of three (3) sections. Section A is the biodata (demographics) column or section. Section B consists of questions based on website quality dimensions and the TAM model, that is questions on all the independent variables. The question based on the actual usage of the PPS is centered on section C. The scales for PU and PEOU is adapted from studies by Sambasivan et al (2010) and Venkatesh and Davis (2000). The measures for TQ, GCQ, SCQ and AQ is adapted from Aladwani (2006) and Aladwani and Plavia (2002). The FC variable and the dependent variable BI and AU are all adapted from

previous studies by Osei-Owusu et al (2020). The five-point type Linkert scale preferably were used for measurement of all variables and respondents subsequently asked to indicate their preferences. A complete list of items under each measure is found in the Appendix. In order to comprehend and understand the reliability of the questions, a preliminary version of the questionnaire roughly twenty (20) in number were tested on some selected users at the ports of Ghana. These twenty (20) selected users are excluded from the main survey. Minimal changes are done on the questionnaire before it was sent to the 425 users.

Results and Discussion
PLS technique (Smart PLS 3.0) was adopted for the study. The conceptual framework of the study (see figure 2) involves predicting behavior intentions of the port users in Ghana in relation to their actual usage of the PPS amid relationships such as PU, PEOU, AQ, TQ, SCQ, GCQ CWA and FC, therefore in such a situation the PLS technique is deemed appropriate. According to Hair et al (2010) the main aim of the PLS- SEM technique is to predict the behavior associated with variables and also cross-examine the theoretical model (Osei-Owusu, Mahmood and Sambasivan et al., 2020).

Respondents Demographics
Out of the 425 questionnaires administered after twelve weeks of questionnaire administration, 332 were valid for the analysis (78 percent respond rate). The remaining 93 constituting (22 percent non-response rate) were all discarded and the reason was to avoid any bias. 211 (64%) of the 332 respondents were male, whilst 121 representing thirty-six percent were female, suggesting that the port business in Ghana is a male dominated venture. 30.1% (100) of the respondents were between the age brackets of 20-41 years, whilst the bulk of the respondents were between the ages of 42-50, that is 214 persons representing sixty-four point five percent (64.5%) and the least been in the age brackets of 51-60 years representing 18 persons constituting five point four percent (5.4%). More than fifty percent of the total respondents, that is 180 persons (54.2%) were educated up to the tertiary level, 141(42.5%) had some form of basic education with 3.3% (11) of the total respondents having some professional qualification related to the port and harbor sector. Interestingly none of the respondents had some form of elementary education, this signifies that the actors within the port sector are highly literates. The majority of the respondents constitute the clearing agent, freight forwarders and declarants' category. These individuals constitute 132 people representing thirty-nine point eight percent. This is followed by customs - GRA workers 66(19.9%) who work at the ports in Ghana. Workers of the port are next with 52 (15.7%). The last three are; MDA's – 10.8%(36), shipping council, shipping lines and agents – 31(9.3%) with collecting banks – 4.5% (15) been the last amongst the respondents. About 98.8 percent of the respondents representing about 328 workers had worked at the maritime industry for between one to twenty years. 4 (1.2%) had a working experience of more than 20 years. This clearly signifies that the respondents were so much abreast with knowledge and experience in the maritime industry and therefore could be in a good position to answer the research questions.

Table 1
Demographics Characteristics of Respondents

No	Items	Frequency	Percentage (%)
1	Gender		
	- Male	211	64.0
	- Female	121	36.0
2	Age		
	- 20-41 Years	100	30.1
	- 42-50 Years	214	64.5
	- 51-60 Years	18	5.4
3	Educational Level		
	- Elementary	0	0
	- Basic	141	42.5
	- Tertiary	180	54.2
	- Professional (Others specify)	11	3.3
4	Which category of group do you belong to at the port?		
	- Customs-GRA	66	19.9
	- Clearing agents' /Freight forwarders / Declarants	132	39.8
	- Collecting Banks (GCB, Eco Bank, SG Bank etc.)	15	4.5
	- Shippers Council, Shipping lines and agents	31	9.3
	- Workers of the Port/ Terminal workers	52	15.7
	- MDA's	36	10.8
5	How long have you been working at the port?		
	- 1-10 Years	208	62.7
	- 11-20 Years	120	36.1
	- 21-30 Years	4	1.20

Reliability and Validity

In testing the reliability of all the constructs, Cronbach's Alpha (CA) and Composite Reliability (CR) were both used. All the constructs had CA and CR loadings greater than 0.7 (See table 2), thus conforming to the proposition of (Straub, 1989). Churchill (1979) has opined that all item loadings should be greater than 0.7. This is evident in the study (See table 2). To confirm convergent validity, AVE values be greater than 0.5 (See Table 2). The results further depict that the AVE and factor loadings of the constructs are greater than 0.5 thus confirming the buildability to explain over half of the variations of its indicators.

According to (Hair et al, 2010; Henseler et al, 2016b) individual constructs are divergent from other constructs. Discriminant validity is confirmed in a study where the diagonal values (square root of AVE) of each latent variable is higher than its highest correlation of the construct. The results in Table 3 supports discriminant validity and also confirm the non-

appearance of multicollinearity (Byrne, 2013). To further confirm the presence of discriminant, the heterotrait-monotrait ratio of correlations (HTMT), which is a multitrait-multi method matrix, must be explored to validate the result of the Fornell –Larcker (1981) criterion (Henseler et al 2015). Subsequently, the HTMT technique was used to test the discriminant validity. Gold et al (2001) and Kline (2011) have both opined that to confirm discriminant validity, the HTMT values should be more than 0.90 and 0.85 respectively. The result as depicted in Table 3 attest to the fact that all the values passed the HTMT criterion of the above-mentioned personalities. The Fornell and Larcker (1981) criterion and the heterotrait-monotrait ratio of correlations (HTMT) results of this study confirm that discriminant validity was realized. Collinearity exist in a study where two indicators are highly correlated, thus for this study (See Table 2) the ideal collinearity statistics (VIF) was realized that is (VIF< 3).

Table 2
Validity and Reliability

Construct	Items	Loadings	Cronbach's Alpha (CA)	CR	AVE	VIF
PU	PU1	0.893	0.933	0.952	0.833	1.977
	PU2	0.934				
	PU3	0.901				
	PU4	0.922				
PEOU	PEOU1	0.900	0.921	0.944	0.809	1.737
	PEOU2	0.891				
	PEOU3	0.924				
	PEOU4	0.883				
AQ	AQ1	0.888	0.911	0.937	0.788	2.675
	AQ2	0.876				
	AQ3	0.883				
	AQ4	0.904				
TQ	TQ1	0.814	0.857	0.903	0.701	1.813
	TQ2	0.840				
	TQ3	0.893				
	TQ4	0.798				
GCQ	GCQ1	0.840	0.905	0.928	0.765	1.977
	GCQ2	0.868				
	GCQ3	0.943				
	GCQ4	0.843				
SCQ	SCQ1	0.949	0.947	0.966	0.904	2.675
	SCQ2	0.962				
	SCQ3	0.942				
	SCQ4					
CAW	CAW1	0.928	0.930	0.955	0.877	1.737
	CAW2	0.928				
	CAW3	0.953				
	CAW4					
FC	FC1	0.821	0.816	0.889	0.728	1.737

	FC2	0.831				
	FC3	0.906				
	FC4					
B1	BI1	0.933	0.939	0.961	0.891	2.491
	BI2	0.950				
	BI3	0.948				
	BI4					
AU	AU1	0.872	0.897	0.928	0.764	2.385
	AU2	0.891				
	AU3	0.864				
	AU4	0.870				

Table 3
Heterotrait-Monotrait Ratio (HTMT)

Construct	1	2	3	4	5	6	7	8	9	10
PU	0.876	0.819	0.842	0.758	0.549	0.044	0.823			
PEOU	0.797	0.794	0.820	0.730	0.532	0.041				
AQ	0.888									
TQ	0.789	0.807	0.808	0.756	0.634	0.072	0.905	0.810	0.806	
GCQ	0.044	0.041	0.029	0.033	0.050					
SCQ	0.844	0.839	0.811	0.670	0.639	0.012	0.823	0.820		
CAW	0.735	0.716	0.736							
FC	0.600	0.712	0.574	0.551						
BI	0.892	0.846								
AU										

Table 4 above outlines an analysis of total effects and their associative sizes. Although the *p* values determine the sizes of an effect, it is not able to portray the right quantity of the effect (Cohen, 1988). Small, medium, and large effect size (f^2) of path co-efficient are depicted by values of 0.02, 0.15 and 0.35 and this is also shown in Table 4. The blindfolding strategy was used to validate the model's predictive relevance (Q^2) with the aid of the cross - validated redundancy technique. The Q^2 value should be above zero (Henseler et al, 2009; Chin, 1998a) and the results are depicted below in Table 4. A models predictive relevance is accepted where R^2 is greater than 0.10 (Falk and Miller, 1992). Also shown in Table 4 is the substantial predictive accuracy (R^2 adjusted) values of the model. The model depicts 0.744 towards Actual Usage and 0.690 toward behavioural intentions.

Table 4
Total effect with effects size, Stone-Geisser Coefficient

f^2			Q^2	R^2
	AU	**B1**		
PU		0.061		
PEOU		0.024		
AQ		0.085		
TQ		0.003		
GCQ		0.001		
SCQ		0.021		
CAW		0.021		
FC	0.050			
BI	1.330		0.650	0.744
AU			0.522	0.690

Structural Model and Hypothesis testing

All the hypotheses related to the study were tested using PLS (Smart PLS 3.0) statistical tool. All outputs related to the study were analyzed and inferences drawn. Hypothesis H_1 which establishes the link between PU and BI is strongly supported ($\beta=0.236$, t=3.908, P<0.05). This implies that if users of Ghana's ports perceive a high level of usefulness of the PPS, the BI to use PPS will be high. Hypothesis (make this change throughout) H_2 which posits a positive relationship between PEOU and BI to use PPS is strongly supported ($\beta= 0.156$, t= 2.540, P<0.05). This implies that if users of the ports in Ghana perceive that PPS is not complicated to use, the BI to use the system will be high. H_3 which establishes the relationship between AQ and BI to use the PPS is not supported ($\beta= 0.061$, t= 0.896, P< 0.05). H_4 which posits the link between TQ of the PPS and BI to use the PPS was strongly supported (($\beta= 0.267$, t= 4.634, P<0.05). This implies that security, ease of navigation, search facilities and site availability were issues the users of the port did not really encounter as a problem, hence in such a situation the BI to use the PPS will be high. H_5 which establishes the relationship between GCQ and BI to use the PPS was also not supported. H_6 which establishes the link between SCQ and BI to use the PPS is also supported ($\beta= 0.135$, t= 2.135, P< 0.05). This implies that general and content information related to the use of the PPS and the details of the PPS services as well as consumer policies and customer support were all made clear to users and that the users did not find any difficulty in assessing information, in that case the BI to use the PPS will be high. H_7 which denotes the relationship between CAW and BI to use the PPS is supported ($\beta= 0.115$, t= 2.315, P< 0.05). This implies that both users and owners of the PPS take cost into consideration in assessing and also in making the PPS available for usage and since in all cases the cost is worth reasonable, then the BI to use the PPS will be high. The link associated with the relationship between H_8 which posits the relationship between FC and AU of the PPS is strongly supported by ($\beta= 0.147$, t= 3.925, P< 0.05). This implies that if the owners of Ghana's port and the government put in much infrastructure and technical backing to make the use of the PPS productive, the AU of the PPS will be high. The relationship between BI and AU of the PPS which is denoted by H9 is strongly supported ($\beta= 0.744$, t= 22.497, P< 0.05). This connotes that the BI construct to use PPS is able to translate into AU by the users of the PPS. In summary, the variables that influence the BI to use PPS by the stakeholders are, PU, PEOU, AQ, SCQ and CAW with FC influencing AU of the PPS. TQ of the PPS and GCQ did not influence

the BI of the stakeholders to use the PPS. The variable, BI influences AU of the PPS. A summary of the paths analysis is shown in Table 5 and the PLS results also shown in figure 2.

Table 5
Structural Model and Hypotheses Testing

| Hypotheses	Path Coefficients	StD	T Statistics	P Values	Results
Perceived Usefulness-> Behavioural Intention	0.236	0.061	3.908	0.000	Supported
Perceived Ease of Use -> Behavioral Intention	0.156	0.062	2.540	0.011	Supported
Appearance Quality -> Behavioral Intention	0.061	0.062	0.896	0.371	Not Supported
Technical Quality -> Behavioral Intention	0.267	0.058	4.634	0.000	Supported
General Content Quality -> Behavioral Intention	-0.017	0.034	0.572	0.568	Not Supported
Specific Content Quality -> Behavioral Intention	0.135	0.065	2.135	0.033	Supported
Cost Associated with the Web -> Behavioral Intention	0.115	0.049	2.315	0.021	Supported
Facilitating Conditions -> Actual Usage	0.147	0.037	3.925	0.000	Supported
Behavioral Intention -> Actual Usage	0.744	0.033	22.497	0.000	Supported
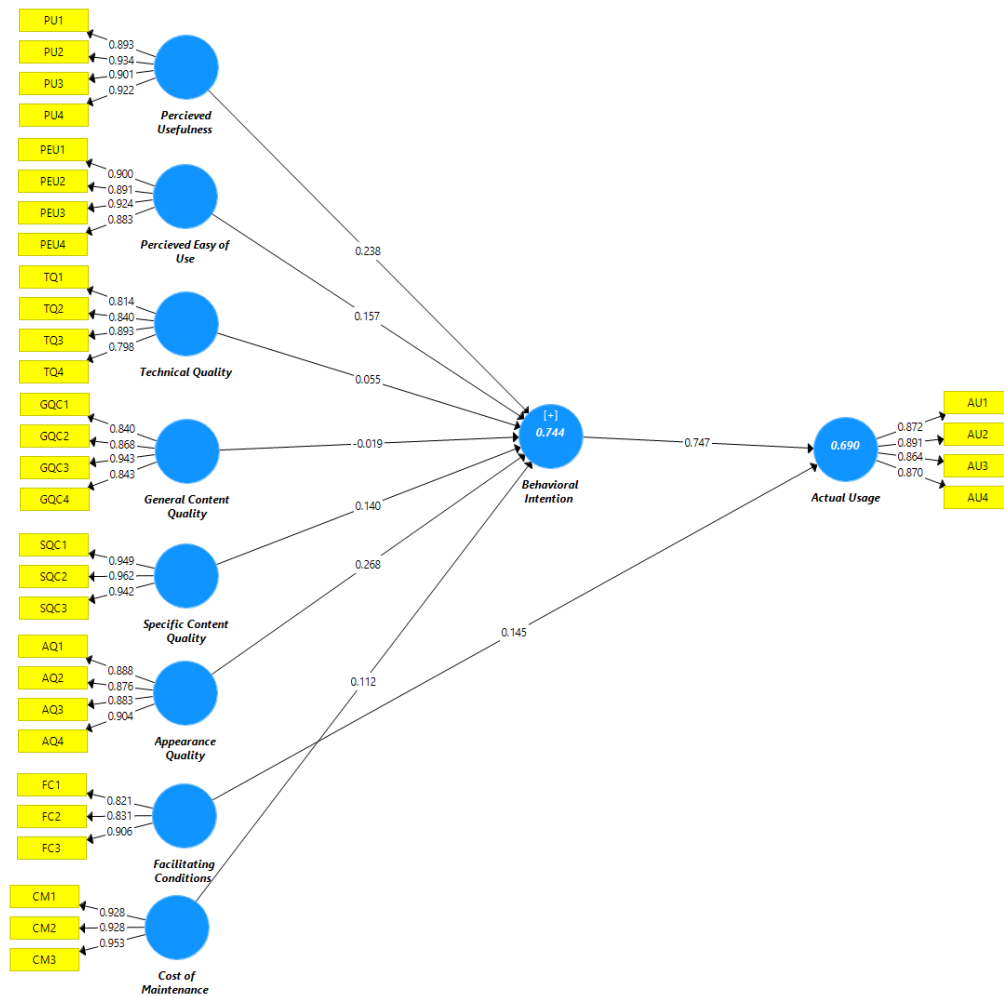
Figure 2: Results of the analysis of the research model.

Conclusion

This research commenced with an alluring topic: examining the role of website quality perception in explaining the actual usage of the PPS in Ghana. At this point the four website quality perceptions outlined by Aladwani and Plavia (2002) consisting of namely; appearance quality, technical quality, general content quality and specific content quality were critically delved into, together with the cost associated with the web which was an additional variable introduced by the authors to examine how that could also influence the actual adoption and usage of the PPS in Ghana. The TAM constructs that is PU which depicts efficiency, PEOU which also depicts ease of use and FC which portrays the existence of resources were all delved into and the relevant hypothesis related to the study developed from the constructs mentioned above. The website quality perceptions developed by Aladwani and Plavia (2002) fused with the TAM model developed by Davis et al (1989) were found to be appropriate to address the research questions stated in this study. AQ, TQ, GCQ and SCQ associated with the website quality perceptions were maintained together with PU, PEOU and FC incorporated from the TAM model. The analysis of the entire study was done with the PLS- SEM statistical tool. The study confirmed constructs of predicating BI to use the PPS (TQ, SCQ, CAW, PU and PEOU). The AU of the PPS is predicated by one variable that is FC. Two of the variables namely; AQ and GCQ are not able to predict the BI to use the PPS. The model of the study also

accounted for 69% of variation of BI and 74% of AU in explaining technology acceptance and use in a developing country.

The link between PU and BI have been empirically tested and the finding of this study is consistent with this results (Sambasiva et al, 2010; Venkatesh and Davis 2002; Davis et al, 1989). In examining the role of website quality perceptions in explaining the actual usage of the PPS, the efficiency and productivity that users perceive from gaining from the system usage is very essential. This means the stakeholders of the port in Ghana namely; the government and the port authority (GPHA) should embark on serious education and training so as to enable the users of the port increase their efficiency, skills and attitudes with regards to the PPS.

The relationship between PEOU and BI is consistent with current literature (Sambasivan et al, 2010; Adams et al, 1992; Davis et al, 1989). This means in assessing the role of website quality perceptions in explaining actual usage of PPS, the PEOU construct cannot be ignored because it simplifies the usage of the PPS with ease and comfortability and thus leads to higher patronage.

The link between FC and BI has also been confirmed in this study and this also conforms to existing literature (Sambasivan et al, 2010; Velenkesh et al, 2003; Davis et al, 1989). The resources provided by the government and relevant stakeholders of the ports in Ghana is necessary to help increase patronage and usage of the PPS.

The relationship between TQ and BI is confirmed in this study and this is consistent with existing literature (Al-Qeisi, 2015; Sambasivan et al, 2010; Aladwani, 2006). This means the appearance of a website is not enough to attract prospective users but the technical attributes of the web such as security to guarantee the safety of information displayed on the web together with other attributes such as availability, ease of navigation and many others are fundamental.

Similarly, the link between SCQ and BI is also supported in this study. This means for a web to have regular and consistent users, the specificity of the web which relates the information about its operations, services and activities is very essential. The link between SCQ and BI is consistent with literature and confirms existing research studies (Sambasivan et al, 2010; Aladwani, 2006).

The study proposed a new variable as one of the attributes of website quality dimensions that is CAW, and the empirically relationship between this variable and BI was also confirmed in this study. This means both users and designers of a web consider cost as a very important element before designing and as well as visiting a particular web.

The link between AQ and BI as well as GCQ and BI were not all confirmed in this study.

The relationship between BI and AU was also confirmed in this study and this finding is consistent with other studies (Osei - Owusu et al, 2020; Attuquafieo, 2019). The PPS operates in a mandatory environment in Ghana and therefore as one decides to use it in clearing goods or for export, an intention is formed and this intention must trigger or translate into actual usage.

Theoretically, this study contributes to existing literature on IS / IT. This is because we have proposed a new attribute or dimension to website quality known as cost associated with the web (CAW) and this has been confirmed in this study as significant in influencing web usage and design. This study also augments the scanty literature that exist in Africa and for that matter Ghana in the area of IT and IS in the shipping and harbor sector as alluded by (Wiafe et al, 2019).

Practically, this study has also revealed that the appearance of a website is not enough for individuals to engage in its usage but the technical attributes as well as the specificity attached to the web is an important factor that users decide before visiting the web. Therefore, if the government of Ghana as well as the owners of the ports in Ghana can attract more users to the PPS, then subsequently the technical attributes as well as the specific contents of the PPS should be given regular and consistent attention.

Finally, the authors proposed that the new dimension of website design quality that has been confirmed in this study should also be applied on similar future online studies to ascertain its usefulness and authenticity.

A future longitudinal study will also help in explaining the causative association between the variables.

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