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Research Article

Bring Your Own Device: A Perspective from the Ports and Maritime Industry in Ghana

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Abstract

The current research looked into what makes Ghanaian worked more or less likely to take part in BYOD initiative. Bring-your-device (BYOD) initiatives are policies that allow workers to use their own mobile phones, tablets, computers, and other consumer electronics for company business.

BRING YOUR OWN DEVICE

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INTRODUCTION

The current research looked into what makes Ghanaian workers more or less likely to take part in a BYOD initiative. Bring-your-own-device (BYOD) initiatives are policies that allow workers to use their own mobile phones, tablets, computers, and other consumer electronics for company business (Gupta, Bhardwaj, & Singh, 2019). Iovan and Ivănuş (2018) found that businesses that allow employees to use their own devices for work had gains in operational efficiency, reduced costs, increased responsiveness, and increased competitiveness.

During the COVID-19 pandemic, most firms closed their doors and allowed workers to work from home using personal devices to decrease the risk of exposure to the virus while maintaining company continuity (Davison, 2020; Richter, 2020). While nations recover from the COVID-19 epidemic, businesses are making BYOD a common practice in the workplace in order to keep the built-in cost savings and continue the elevated employee productivity advantages (Floetgen et al., 2021; Scott et al., 2021). When employees are allowed to use their own devices to gain access to company resources, they are said to be working in a "bring your own device" (BYOD) environment (AKiah, M. Palanisamy, 2019).

Employees' willingness to participate in BYOD programs is negatively impacted by a number of problems (Gökçe, K. G., & Dogerlioglu, 2019). Employees have stated that they are expected to respond immediately, no matter the time or location, to inquiries from customers, coworkers, and superiors (Gökçe & Dogerlioglu, 2019). A number of employees voiced reservations about connecting their personal mobile devices to the company network due to privacy and security concerns. Due to privacy and security measures, workers could not use their personal gadgets to their full potential (Weidman, J., & Grossklags, 2017). Workers lost faith in management's ability to keep control when inquiries found private information they were not yet willing to discuss in the event of a company-wide examination (Ratchford, M., Wang, P., & Sbeit, 2017). Employees' BYOD adoption is being stymied by growing levels of anxiety over the practice (Chen et al., 2020).

The port and maritime economy seaports are vital to the economies of the nations in which they are situated (Ho et al., 2018). Eighty percent of the world's trade occurs on the water, while more than seventy percent occurs on land (UNCTAD, 2021). Growing globalization has boosted competition in the movement of commodities between seaports, resulting in a dramatic increase in the number of vessels operating through various seaports using a range of transport modes (Zeng et al., 2019). The maritime and port sectors play a vital role in the facilitation of trade as well as the development of value and wealth. Previous studies on bring-your-own-device (BYOD) adoption focused on businesses, employees, and consumer markets, respectively (Akin-adetoro, 2021; Klesel et al., 2018).

From the standpoint of enterprises, the research focused on control frameworks and the benefits of bring-your-own-device rules. These governance frameworks oversee how devices used by employees connect to the organization's network, as well as the risks and cyber security attacks posed by employees' personal devices (Aguboshim & Udobi, 2019; Chen, Het al., 2020; Koesyairy, 2019). The research conducted on bring-your-own-device (BYOD) adoption assessed how employees felt about the practice in relation to the possible risks it posed.

There was a paucity of empirical study on the factors that influenced employees' inclination to participate in BYOD notably in the maritime and ports sector, given the significant contribution of the maritime and port sector to the economies of most countries

around the globe (Zhang et al., 2019; Ho et al., 2018). Comparable studies assessed the participants' BYOD intentions in Ghana using UTAUT2 as the theoretical framework focused on students and not employees from diverse economic sectors (Wang et al., 2017; Weeger et al., 2018). To fill this specific theoretical and empirical gap in the study, we ask the following overarching question: "What factors influence maritime and port users' behavioral intention to enroll in a BYOD program?".

From this perspective, the following contributions are made to previously published research: As a first step, the UTAUT2 theoretical framework is adapted to the maritime and port industry in order to gain a knowledge of the unique features that influence port users' willingness to participate in a BYOD program, which is currently absent from the relevant body of research. Second, we present empirical evidence about the six predictors of UTAUT2 and their contributions to BYOD adoption in Ghana, particularly in the maritime and port perspectives. This is done with the purpose of fostering dialogues among industry participants regarding the major determinants of BYOD adoption. Thirdly, from a maritime and port perspective, we contribute to the UTAUT2 theoretical framework.

This paradigm is appropriate for the adoption of new technologies because its forecast accuracy is 70 percent, which is much greater than other technology adoption theories (V. Venkatesh, 2012). In addition, Crawford (2020) says that over 5,000 articles analyzed by specialists in the field utilized UTAUT2 as a theoretical framework to explain the factors that influence the adoption of new technologies. The remaining portions of the paper are divided into the following sections: In Section 2, a survey of pertinent literature and a theoretical foundation are provided. In Section 3, the research approach, data collection procedures, and analysis processes are detailed. In the 4th segment, the findings will be provided and discussed, and the 5th section will explore and describe the recommendations, along with their practical and policy implications. This section concludes with a summary of the paper's findings, a discussion of the study's limitations, and a discussion of prospective future research directions.

LITERATURE

Employees now use mobile smartphones and other network-capable technology on a daily basis (Krumm, 2018). These devices are ubiquitous in the homes, workplaces, and social environments of employees (Lee et al., 2016). During the global COVID-19 epidemic, businesses lacked a BYOD policy that allowed employees to complete work-related tasks with their own devices (Bonacini et al., 2020). In previous research on BYOD acceptance in the workplace, both company and employee viewpoints were considered (AkinAdetoro & Kabanda, 2021; Klesel et al., 2019).

The literature focused on governance structures and the corporate benefits of BYOD. These governance frameworks regulate how employees connect their own devices to the organization's network and protect against data breaches and cyber threats (Aguboshim & Udobi, 2019; Koesyairy et al., 2019). In addition, independent constructions indicate a connection based on the predictability of the UTAUT2.

In the studies conducted by Tamilmani et al. (2020), performance expectancy (PE) was determined to be the most accurate predictor of behavioral intention (BI). In addition, the researchers discovered that effort expectancy (EE) was the second best predictor of BI. Again, Wang et al. (2017) discovered that the impact of social influence (SI) on BI varied between Americans and Germans. As a result of their emotional connection to the group, individuals of collective cultures place a greater emphasis on their personal brand within the community. It was determined that BI was significantly affected by facilitating conditions (FC) and that this had a direct effect on employees' attitudes (Ouattara, 2017; Dwivedi et al., 2017) hedonic motivation (HM) and Habit (HT) predicted employees' BI to use technology in Ontario, Canada (Ouattara, 2017).

Moreover, Price Value (PV) was less significant for employees whose daily activities were well-aligned with technology (Tamilmani et al., 2020). Contradictory results were reported for the moderating effect of age, as previous research demonstrated that citizens' ages greatly affected their behavioral intention to use e-government services (Munyoka and Maharaj, 2017). Nikolopoulou et al. (2020) showed no statistical difference between age groups in the adoption of personal mobile devices in educational settings.

Over the past few decades, research on technology adaptation has produced a variety of theories and models to clarify and identify the elements that drive the adoption of new technologies. This collection of theories includes Theories of Reasoned Actions, Innovation Diffusion Theory, Planned Behavior, Decomposed Theory of Planned Behavior, Theory of Innovation Resistance, Perceived Characteristics of Innovation (PCI), Theory of Perceived Risk, and Unified Theory of Acceptance and Use of Technology

(UTAUT). The UTAUT theoretical framework was chosen since it explains 70% of the variance in BI and around 50% of the variance in consumption (Crawford, 2020). The UTAUT2 theoretical framework served as the foundation for this study. As an expansion of the original UTAUT paradigm, UTAUT2 contains eight new overlapping concepts regarding technology adoption. The Theory of Reasoned Action, the Theory of Planned Behavior, the Theory of Technology Acceptance Model, the Model of Personal Computer Use, the Motivational Model, and the Innovation Diffusion Theory (Venkatesh et al., 2012). Venkatesh et al., (2012) extended UTAUT2 to account for the influence of social impact, hedonic advantages, end-user experience, and age on people's technology adoption behavior in enterprises.

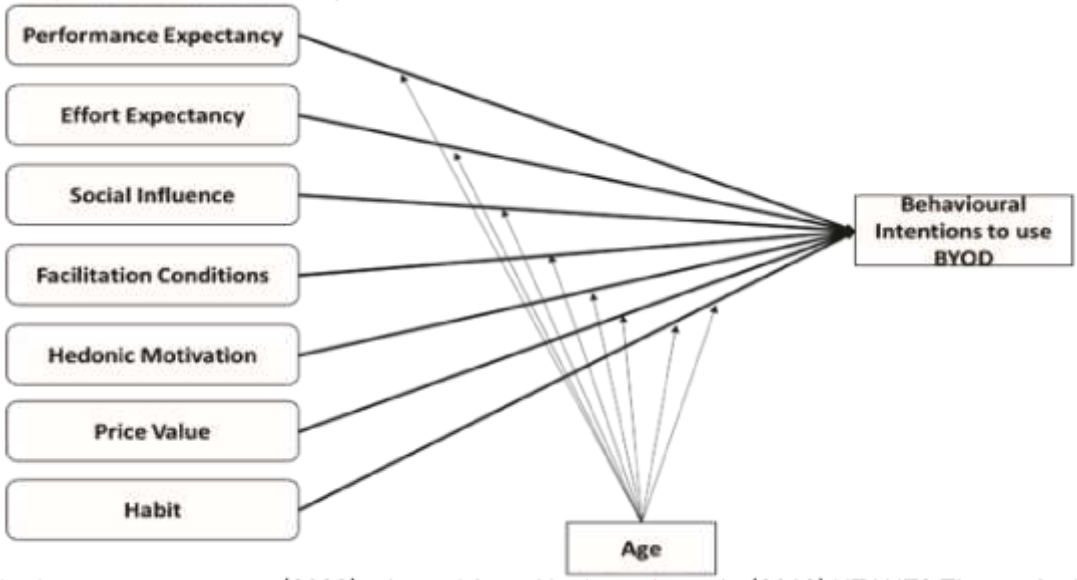

Figure 1: Authors own construct (2022) adapted from Venkatesh et al., (2012) UTAUT2 Theoretical Framework

Construct	Operational Definition	Hypotheses
Performance Expectancy (PE)	Defined by Wang et al. (2017) as "the usage of new technology by individuals because of the perceived benefits of technology.	Ha_1, PE has a beneficial effect on the BYOD participation of marine and port users.
Effort Expectancy (EE)	Venkatesh (2012) defines EE as the degree of ease of use of a technology system	Ha_2, EE influences the willingness of maritime and port users to participate in the BYOD Program
Social Influence (SI)	Defined by Venkatesh et al. (2003) as the extent to which individuals think that significant others in their lives expect them to utilize the new technology.	Ha_3, SI significantly influences BYOD Program participation among maritime and port users
Facilitating Conditions (FC)	Defined by Venkatesh et al. (2003) as the degree to which individuals perceive the presence of organizational and technical infrastructure to facilitate utilization of the technology system	Ha_4, FC promotes maritime and port user participation in the BYOD program positively.
Hedonic Motivation (HM)	HM is the degree of pleasure or enjoyment caused by the use of technology and is essential for determining the pace of technology adoption (Venkatesh et al. 2012)	Ha_5, HM positively influences BI of maritime and port users to participate on BYOD Program

Price Value (PV)	PV is the perceived tradeoff between new technology and the cost of adopting that technology	Ha_6, PV positively influences BI of maritime and port users to participate on BYOD Program
Habit (HT)	HT is behavior thought to be repetitive because of repeated activities over time	Ha_7, positively influences BI of maritime and port users to participate on BYOD Program.
Moderating effect of Age	The age range of Ghanaian maritime and port personnel is between 18 and 64 years old (Adeniran et al., 2019)	Ha_8: the independent constructs (PE, EE, SI, FC, HM, PV and HT) strongly influence BI of maritime and port users to join in BYOD Program, mediated by Age.

Source: Authors own Construct (2022)

APPROACH

This study used a correlational research approach to investigate the factors that influence marine and port users' propensity to join in BYOD initiatives. The survey instrument created by Venkatesh et al. (2012), which utilized a 7-point Likert scale to obtain data from participants, was utilized in the present investigation. Seven-point Likert scales were necessary for Structural Equation Modelling (Bhardwaj et al., 2021). Respondents could access the survey instrument through a third-party data collection site (googleforms). We utilized Google Forms to end the survey automatically for respondents who did not fulfill the inclusion requirements based on their responses to certain questions. The target demographic of the study comprised of maritime and port users aged 18 to 64.

According to Omondi (2020), eighty percent of the adult population possesses at least one mobile device; accordingly, it was projected that eighty percent of the 2,584,625 adults will comprise the study's population. At a significance level of 5%, a sample size of 410 was recruited from the target population (Doná, 2006). Gob et al. (2007) measured respondents' value judgment based on their attitudes, opinions, and viewpoints on the statements in that section using a Likert-type scale. Principal Component Analysis (PCA) in Statistical Package for the Social Sciences (SPSS) version 23 and Structural Equation Modelling(SEM) in Stata version17 were used to evaluate the gathered data.

FINDINGS AND DISCUSSIONS

All 401 participants with unresolved questions contributed to the study by providing feedback. 28.7% of the 401 survey respondents were female, while 71.3% were male, indicating that males are more prevalent than females in the maritime and ports industry. The age group between 25 and 34 years old had the highest percentage (61.9%), showing that the maritime and port sample population is predominantly young. 14.3 percent of respondents had a high school diploma, 13.5 percent had no certificate, 12.8 percent had a bachelor's degree, 12.3 percent had a master's degree, 11.3 percent had a PhD, and 9.5 percent had a professional certificate.

According to these data, despite the technical character of the industry, which demands specialist knowledge, the maritime and port sector has seen a considerable increase in schooling. The degree to which participants agreed or disagreed with the statement was also considered when evaluating the responses (1-Strongly Disagree, 2-Disagree, 3-Neutral, 4-Agree, and Strongly Agree-5). The weighted mean score for all dimensions was 4, indicating that all participants were pleased with their performance. The standard deviation represents the degree of dispersion among the responses of the participants. According to the findings, there were several reactions. In general, the majority of responses exhibit some degree of precision in measuring constructs, which is an encouraging sign for the data description.

MEASUREMENT OF CONSTRUCTS

Based on a weighted average Bartlett's test of sphericity score of 0.01 (Sig ← 0.05) and a weighted average KMO score of 0.758%, the sample is eligible for factor analysis. According to Hair et al. (2014), the factor loading score of each component was larger than 0.70. Except for SI and PV, all factor loadings in the component matrix are over the threshold, with the exception of SI and PV. The research revealed twenty-five factors with a cumulative variance explained value of 82,686%, indicating that the variables account for a larger part of the variance.

Table 1: Measurement of Constructs

Constructs	KMO	Bartletts Test of Sphericity	Total Variance Explained	AVE	Composite Reliability	Cronbach Alpha	Factor Loadings
PE	0.839	0.001	78.708	0.624	0.868	0.909	0.787
EE	0.858	0.001	86.099	0.741	0.920	0.946	0.861
FC	0.762	0.001	66.233	0.778	0.913	0.933	0.882
HM	0.500	0.001	92.848	0.619	0.765	0.923	0.964
HT	0.815	0.001	81.259	0.886	0.661	0.923	0.813
BI	0.774	0.001	90.966	0.935	0.828	0.950	0.910
Weighted Average	**0.758**	**0.001**	**82.686**	**0.764**	**0.826**	**0.931**	**0.870**

Source: Field Data (2022)

Construct validity was assessed using both convergent and discriminant validity. The weighted Average variance extracted (AVE) score of 0.764 exceeded the Fornell, C., & Larcker, (1981) threshold of 0.5, confirming convergence validity. The weighted Composite Reliability (CR) score of 0.826 also showed the internal consistency of the 25 items used to generate the CR scores. According to Fornell and Larcker (1981), a CR score above 0.70 implies convergence validity. This rule was not broken.

GOODNESS IF FIX INDICES

The Root Mean Square Error of Approximation (RMSEA) = 0.082 (acceptable fitness level), Comparative Fit Index (CFI) = 0.95 (optimal fitness level), and Tucker-Lewis Index (TLI) =0.95. (ideal level of fitness). Indexes of goodness of fit quantify the extent to which the data correlate to the model. According to Hair et al., the SEM route analysis undertaken revealed no breaches of fix index limits (2014).

HYPOTHESIZED MODEL TEST RESULTS

The structural equation model demonstrated that the hypothesized constructs, including PE (P= 0.20, sign ← 0.001), EE (P = 0.24, sign ← 0.001), FC (P = 0.10, sign ← 0.001), and HT (P= 0.61, sign ← 0.001), have a substantial positive influence on the BI of employees to participate in the BYOD program. SI, HM, and PV failed to explain and forecast the employees' BI to join in the BYOD program. Age did not moderate the prediction as predicted initially. The link between the predictors and the endogenous variable was unaffected by age BI.

CONCLUSIONS AND RECOMMENDATION

The findings indicate that a 20% rise in BI is associated with a 20% change in PE, demonstrating that PE predicted or explained BI at 0.20. PE was found to be the third largest predictor of BI among maritime and port users' BI to join in a BYOD program in this study. This result is consistent with the findings of Tamilmani et al. (2020) and Weeger et al. (2018), who found that PE is the best predictor of BI. According to Niehaves et al. (2012) and Wang et al. (2017), employees utilize technology when there is a good task-to-device match. The authors continued by asserting that technology enhanced organizational productivity and employee performance.

The BI of port users to participate in a BYOD program was shown to be most highly predicted by HT, which contributed 61% of the variance. Previous research has demonstrated that HT predicts BI. According to Hu et al. (2020), HT had a significant impact on the BI of academics at work. Similar findings were reported by Nikolopoulou et al. (2020), who discovered that adopting and utilizing mobile internet had a positive effect on instructors' real use of technology. In this study's research of the predictability of HT on BI, the construct is evaluated as the most accurate predictor of BI (61%).

Consequently, BYOD program users who work in maritime and port sectors are more likely to participate in the program and maintain this habit over time (Kim et al., 2005; Limayem et al., 2007). The next strongest predictor of BI was EE, which contributed 24% and ranked third. In their respective studies, Tamilmani et al. (2020) and Weeger et al. (2018) found that EE was the second strongest predictor of BI; however, the present analysis ranked EE third. Wang et al. (2017) discovered conflicting evidence that EE associated with technology use negatively influences PE and task completion efficiency. FC contributed 10% to BI and served as the least accurate predictor of BI (Dwivedi et al., 2017; Ouattara, 2017). Similar to the findings of our study, these data indicate that FC directly impacted employees' attitudes and substantially influenced their propensity to use technology.

The likelihood of maritime and port users to participate in a BYOD program could not be accurately predicted by any of the three predictors (SI, HM, or PV). The study that has been done thus far suggests that regardless of a person's native culture, the effect of effort anticipation and social influence on a person's social intelligence may be significantly dependent on the setting in which the interaction takes place (Wang et al., 2017). Since Venkatesh et al. (2003) argued that in voluntary conditions, SI may not significantly alter intention, the effect of SI on BI was inconclusive. Their analysis showed that SI had the second-greatest influence on BI's decision to participate in a BYOD program in certain cultures; therefore, its unpredictability in this study may be due to the fact that it was one of the factors they examined.

According to previous research (Ouattara, 2017), HM correctly predicted the BI of employees in Ontario, Canada to use technology. Even though employees were required to establish satisfaction, which is more important, and induce some fun in conducting a specified task on a technology that is easier to use than on a system that is difficult to use, HM was initially conceived of as a predictor of BI by Venkatesh et al. (2012). This was the case despite the fact that HM was initially conceived of as a predictor of BI. The findings of this study were inconsistent, leading the researchers to conclude that HM was unable to accurately predict the percentage of maritime and port users who would sign up for a BYOD program in

that sector of the economy. The value of PV followed the same pattern as HM, which was unable to accurately predict BI. According to the findings of Blut et al. (2022), the effect of PV was significantly less significant for employees who were imaginative and early adopters and who used the most recent consumer market equipment than it was for employees who were laggards. On the basis of the research that were available, it was not possible for PV to explain or anticipate the BI of maritime and port customers to participate in a BYOD program.

Another issue that was noticed was that age did not seem to have any moderating effect on any of the expected independent variables when it came to predicting BI. The research conducted by Nordhoff et al. (2020), who found a modest negative effect of new technology adoption on BI, made it abundantly clear that age does not have a moderating influence on BI.

In a study that was carried out by Munyoka and Maharaj (2017), the researchers came to the seemingly conflicting conclusion that the participants' ages had a significant impact on their BI to adopt e-government services. Chang et al. (2019) conducted a series of tests in which they observed that age had an effect on the connections between EE, SI, HM, and BI. Because this study did not find a moderating effect of Age, it is safe to assume that Age does not have the ability to moderate the extent to which PE, EE, SI, FC, HM, PV, and HT predict maritime and port users BI's likelihood of enrolling in a BYOD program in that sector.

1. PRACTICAL IMPLICATIONS FOR THEORY AND PRACTICE

The theoretical and practical significance of this paper are related to the study needs that were stated in the previous section. It was common knowledge that the vast majority of research on bring-your-own-device had been carried out in fields apart from the maritime and port industries. The researcher conducted a study of the relevant literature, and found that none of the studies had focused on the broad adoption of BYOD among working class people in the age range of 18 to 64 in the maritime and ports industry. In addition, none of the research had made use of the UTAUT2 in order to gain an understanding of the Ghanaian instance in terms of the marine and port consumers that are involved in that business. When viewed from these vantage points, it was clear that there were theoretical, empirical, and methodological gaps in the existing research. This study offers some theoretical insight into the UTAUT2 paradigm, focusing on how it applies to users of marine and port facilities in Ghana. As a direct result of this, the operational model that includes all four elements (PE, EE, FC, and HT) has developed into the key predictors of BI in the maritime and port industries. Academics now have a road map for adopting this methodology in other jurisdictions as a result of this. The empirical findings of the current study relate to the ongoing debate surrounding the implementation of BYOD in the subregion in the wake of the COVID19 epidemic.

2. RECOMMENDATION AND LIMITATION OF THE STUDY

BYOD providers, governments, and maritime and port stakeholders have a larger market to facilitate trade and generate wealth; as a result, the provision of BYOD infrastructure to facilitate BYOD adoption is essential. This is because the maritime and port sector is important to the economies of most nations.

This is crucial since the outcomes of this study were unable to account for favorable conditions as a predictor of behavioral intention to adopt BYOD among marine and port users. In order to foster the expansion of BYOD services throughout the industry, the Ghanaian Maritime and Ports Authority ought to investigate the possibility of formulating BYOD policies that are both one-of-a-kind and adaptable.

To encourage stakeholders in the maritime and port industries to adopt BYOD initiatives, BYOD service providers in these industries should improve their offers. The inclusion criteria for this study were for participants to be Ghanaians who were either employed in the maritime or port industry or were between the ages of 18 and 64.

Those who have already participated in one or more BYOD programs while being temporarily based outside of the maritime and ports industry are unable to join, as was previously mentioned. In the future, researchers can extend the scope of the study to include additional facets of Ghanaian society in order to gain a deeper comprehension of the factors that play a role in determining the rate of BYOD adoption.