

Electronic Voucher Payment System: Toward A Leavitt Diamond Analytical Perspectives of Technological Change

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Abstract

This paper presents an empirical estimate of the implementation of the electronic Payment Voucher System (E-SPV) of the Controller and Accountant General Department of Ghana (CAGD). Using the Leavitt Diamond theory of technological change as the lens across six regions in Ghana with 420 validators and 80 non validators, the study revealed enormous challenges of the implementation which are: lack of adequate skills in handling electronic application; lack of computers and Internet access especially in the remote areas for validation as well as the service not being user friendly to persons with disability (PWD). This paper has therefore revealed that irrespective of these enormous challenges, users of E-PVS see the system to be effective to curb issues relating to corrupt practices. Also the system gives users prompt and improved access to pay vouchers before salary payment. However, in spite of the broad encouraging acceptance of the new system of payment, enduring challenges continue to occur. Per the Leavitt Diamond theoretical perspectives, the position of the paper is that the interlaced components of people, structure, technology and tasks or process should be addressed simultaneously to maximize the rationale for the implementation of the electronic system. Future research directions can look at how to make the payment system user friendly for the visually-impaired teacher at the people dimension and look at how to create the offline validation process as a credible alternative.

Keywords: Electronic Payment, Voucher System, Levitt Diamond, Implementation, Challenges.

Introduction

The management of the public sector in much of the developing world appears to be riddled with nagging issues of corruption, embezzlement and fraud, especially in the administration of its payroll systems. The two (2) major areas of government expenditure and – arguably – most vulnerable for misappropriation are wages and salaries. Payroll information control is considered a critical issue for both the employees and employer (mainly the government) such that its management remains topmost priority. The intense manual payroll processes involved with the processing of employee documents are considered fundamentally flawed, error-prone, and erratic and cause employees and employers' frustration in accessing information (Berson & Dubov, 2010) for the right decisions about their proper payment administration. To help reduce the administrative weight of manual payment processes on employees and advance the immediate access to records and ensure enhanced productivity, human resource (HR) professionals,

governments and businesses see a reason for the introduction of a system of technology to be instrumental for the processing of payment system.

The emergence and the use of the e-payment systems in the West African sub-region have come to avert certain problems associated with the old system of payments (Ayodele, 2015; J. K. Boateng, Tetteh, & Boateng, 2015; A. Kabir, Z. S. Saidin, & A. Ahmi, 2015). Electronic payment systems have gained an appreciable level of acceptance among the people in the developing world (M. E. Agwu & A. L. Carter, 2014). Ghana public workers have been paid through the manual system since independence. Various governments over the years have tried to improve the mode of payment with the proposal that, the system is bedeviled with issues of ghost names, people receiving double salaries, people being paid for no work done etc. The need to ensure expedited payment settlement, ease of carrying out transactions, the quest for safety and secured transactions among others have placed the electronic payment systems (EPS) beyond the “cash based system” mentality (Antwi, Hamza, & Bavoh, 2015) as part of the broad agenda for emerging reforms in the public sector.

In 2014, when the government of Ghana categorically transferred its public workers into an Electronic Salary Payment Voucher (E-SPV) system with the intention of sanitizing the system through the Controller and Accountant General’s Department (GAGD) little has been done to look into the switch to the electronic salary payroll voucher system. Again, even though the EPS is growing in popularity and acceptance across both public-sector institutions and business organizations (both small and large ones). Agwu & Carter (2014), and continue to attract research attention Kabir, Saidin et al (2015) there is apparent lacuna in the literature addressing the issue of electronic payment systems within the public sector from the standpoint of information technology (IT) and change management theoretical insights. It is from this observation that this study aspires to provide an understanding as a starting point not to only contribute but also extend the body of literature on electronic payment systems, especially from a developing country perspective. Achieving this objective is significant on, at least, a couple of points. The first issue is to update our knowledge on the issues of electronic payment systems driven by public sector IT change reforms. The second motivation is to determine the extent to which the Leavitt Diamond (H. J. Leavitt, 1972) theoretical model is still very much relevant to organizational change dynamics in spite of its long historical and academic trajectory.

The Practice of Electronic Payment Systems

Electronic payment systems are explained as those direct electronic transactions carried through the use of smart cards, credit cards, and debit cards, electronic cheques from one party to another. These forms of transactions rely on electronic networks like the Internet, usually, with connections to servers (M. E. Agwu & A. L. Carter, 2014; Anyanwu, Ezugwu, & Abdullahi, 2012). Similarly, Hamed and Berger (2012) believe that electronic payment systems are digitalized payments that are undertaken through the combination of two electronic devices, that are complimentary in their functions. Some scholars are of the view that the electronic modes and means of conventional transactions are not time bound and give exclusive freedom to the individual actor to perform any

form of business transactions at their own convenience (Hamad & Berger, 2012). Sumanjeet (2009), emphasized the fact that electronic process of sending and receiving bills, payments and other transactions have no boundary and can be undertaken from the remotest vicinity around the world to another within a space of time provided there are logistical and infrastructural support such as Internet connectivity and servers among others to facilitate such activity. E-payment is of no exception, since it is seen as a medium of making financial transactions and reduces the burden of joining undesirable and hectic queues especially in banking halls. Payment of taxes to the government through the revenue collection agencies, licenses acquisition from authorized department units can be made at one's convenience. In spite of the benefits of using e-system of payment, there are also some challenges such as accessibility, some form of anonymity, reliability and legal regulatory policies.

Snellman et al. (2001) identified some conditions that can instigate the use of the electronic media and among them are; encouraging more and more firms and companies to accept payments through electronic means such as the credit and debit cards, mobile transfers, ATM transactions, electronic cheques, visa cards and e-zwich among others. Companies can also adopt a system where salaries and wages of their employees are paid through electronic means. In view of this there is the need to introduce regulatory and policy measures that would make it possible for refund of money in cases of unlawful transaction, without adequate authorization or malfunctions or faulty e-machines. Suggestion has been made elsewhere that electronic payment systems can be promoted by using incentives like no charges for common electronic transactions. For instance in the Saudi Arabia, 'the advent of the electronic payment system propelled aggregate transaction from 23% in 2003 to 91% in 2010'(Alotaibi & Asutay, 2015). This attests to the fact that the economy and its structures, including regulatory instruments were ready to accommodate the EPS. Moreover, the development of infrastructures that will support the smooth running of the electronic payment system alone offers the opportunity for businesses and individuals to take advantage and be on board in the application of electronic technologies for transaction settlement. Anyanwu et al. (2012), for instance, has postulated that developing the electronic payment system in Nigeria will inspire confidence in individuals and groups to accept and adopt the use of the system.

Thus, migrating from the use of paper processes to transact businesses and make payments in an electronic payment system was seen as favourable to the conditions of the Saudi Arabian economy. The manifestations of these increases in transactions shows the level of confidence people have in the electronic payment system and how reliable and convenient it is for people to use. Logically, it could be argued that the electronic payment system is much more convenient, cost effective and security is assured and also enhances economic prowess (AL-Adwan, AL-Zyood, & Ishfaq, 2013). Additionally, some European countries have successfully migrated to, and rely heavily on, the electronic system such as credit and debit cards in transacting cash, for instance, the United States uses electronic checks whereas the Japanese uses cash at the point of sale. These electronic transaction forms emanated from their traditional system of financial banking which has gone through a series of changes until now. However, for these developed countries to achieve complete

electronically wired system of trade, transactions, payments and banking, they have instituted what is known as the “cost based pricing”. This basically means that the more the cost of transacting business, the more the customer pays. Hence, the more paper works are involved, the more the cost of transactions (Snellman et al., 2001).

The electronic payment systems are identical in their functionalities and only differ in some aspects of their operations and hence difficult to state the EPS type which is best for individuals and organizational usage. However, there are certain indicators that attract the attention of users in electronic transactions in general. Ease of use, the relevance, cost effectiveness, existence of agreement standards, acceptable levels of security and reliable organizational support driven by public policy (K. A. Boateng, 2009) can all inform the use of electronic payment systems (Okifo & Igbunu, 2015). With these possibilities, e-payment systems provide greater liberty to settle transactions in such mundane activities as fee payment, salaries, bills, fines, taxes among others.

Drawing on the findings of Rouibah (2015) individuals who used EPS demonstrate the pleasant satisfaction towards the outcome of the operations it invokes. Hence, individuals and groups using the EPS indicate their willingness to continue to use it in subsequent occasions. However, they would not hesitate to find an alternative EPS when encountering problem with one. In spite of the encouraging acceptance of the electronic payment system, a few still expressed concerns about certain security worries connected with it. Part of this had to do with stolen identity for online purchases. Again, worries of failed delivery left online buyers in an uncertain state of mind as relevant legal regulatory regimes to support such electronic transactions by appropriate state agencies were not forthcoming. Scenario like this did very little to encourage trust in the whole project. On the contrary Harris et al. (2011) hold the belief that the electronic system of transaction using credit cards, debit cards, e-zwich, electronic cheques and the likes are sluggish and that people prefer the traditional means of transaction settlement system. Moreover, the ability to keep validated data on customers informs managers to view the traditional system in a favourable perspective.

Implementing Electronic payment systems

The implementation of electronic systems of payment especially, in the developing world, is not without troubles. These challenges include weak infrastructural facilities in the form ICT accessibility, affordability, network failure, intermittent power outages, limited bandwidth, or lack of constant supply of Internet connectivity (Bassey, 2008). Matured legal and regulatory schemes needed to support electronic payment systems against fraud and fraudulent practices in in much of the developing world, too, are lacking (Tadesse & Kidan, 2005) . There appears to be some of the issues that constrain the wider spread of EPS, thereby hampering the broader appeal of electronic systems of payment (Ayodele, 2015; Bassey, 2008). Cost of implementation and associated maintenance expenses upon installation of such systems coupled with limited educational background of users have been observed elsewhere as part of the difficulties connected with EPS (M. E. Agwu & A. Carter, 2014). Instances of such factors as educational orientation, constitute a fundamental distinction between users and non-users of an electronic system of payment, thereby reinforcing the notions of digital divide (Castells, 2010). For instance, Nzaro & Magidi (2014) recount elsewhere the idea that people’s desire to apply e-payment system are encumbered by lack of knowledge on the part of clients and insufficient expertise on the part of bank staff to handle operations and provide relevant education to customers of the benefits involved with such modern systems of electronic payment platforms. This situation makes

Kumaga (2011 p.22) contend the point that ‘electronic payments in most African countries are very limited in use or virtually absent’.

Acceptability and usability in electronic payment

For an electronic payment voucher to be frequently used by the public, it should gain acceptance. For instance, Nwaolisa & Kasie, (2012) examined users’ acceptability and payment problems encountered by Nigerians in utilizing electronic banking system. The pair contends that the usage of e-payment system is low among Nigerian citizens in spite of the efforts by the Nigerian government migrating the whole financial banking system unto the electronic system. The low incidence of e-payment usage among Nigerians is attributable to inconsistent and erratic supply of power leading to erratic power outages. They also lack the infrastructural support to sustain the full operation of the electronic payment system.

The variables such as educational level of individual, age and their skills influence the acceptance of the electronic payment systems. Thus, the twenty first century is exposed to a whole IT world which makes it easy for them to have a natural attraction and taste for the use of electronically equipped gadgets without any problems unlike the past generations known. Again, as the educational levels of individuals’ increase, they are more likely to use and embrace IT equipment for easy execution of given tasks (Hamad & Berger, 2012). Getembe, Magutu and Muro., (2013) in their studies on electronic money transfer and business process management in Kenyan commercial banks observed that there were some benefits associated with the electronic payment system. These positive developments were in the areas of avoidance of long queues, low cost of transactions among others. However, some negative occurrences such as system failures, fluctuations in power supply etc. could hardly be ignored.

Theoretical Consideration of the Leavitt Diamond

Change cannot be implemented in isolation, as it can have many knock-on impacts throughout an organization (Benjamin & Scott Morton, 1992), both expected and unexpected. Organizations are inter-connected structures, where changing one part can necessarily impact other aspects (Malone, 2004). Therefore, to implement change successfully, an integrated change strategy has got to be considered (Wigand, 2007). The idea of Leavitt’s Diamond can help you build this integrated strategy as it provides a powerful explanatory framework for understanding the interdependency between four key variables: tasks, people, structure, and technology. Using this framework, can in the analysis in appreciating the impact and implications of the implemented change on the structural and management dynamics of organizational endeavours.

Leavitt Diamond: A Model for Technological Intervention

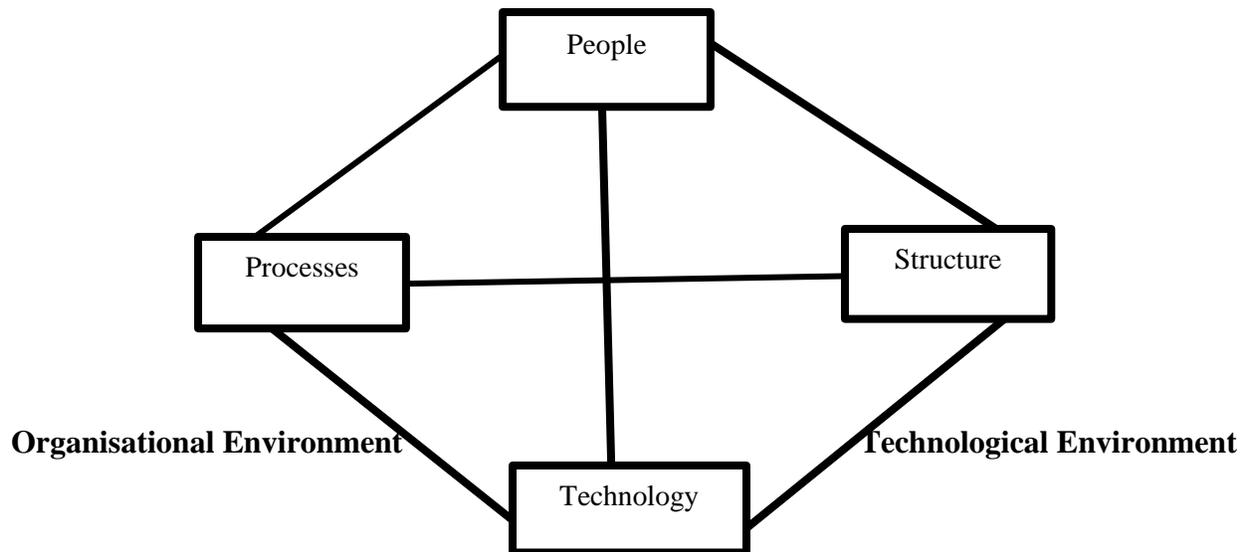


Figure 1: Leavitt Diamond: Laudon & Laudon, 2002, P.78; Leavitt, 1965.

The Leavitt Diamond model, Figure 1, presents one of the powerful and explanatory models for analyzing and understanding technological intervention in organisations (H. Leavitt & Whisler, 1958). Even though the model arrived on the scene of organizational scholarship in the late 1950s, its four fundamental tenets of people, technology, task/process and structure are still very much relevant to contemporary organizational discourse, especially in IT-driven change management practice. The model suggests the idea that it is of prime importance to view all four elements with equal weight at any instance of organizational or institutional change, and that any critical analysis that attempts to downplay and overplay some of the elements over and above others is likely to run into, at least, practical difficulties (Levitt 1965). The four aforementioned precepts are going to be analysed in turn to illustrate the abiding significance of this model.

People

Leavitt Diamond's postulations on the people element of the framework in relation to the technological change was based on the orientation of the people that finds expression in their believe systems, attitudes and behaviours (H. Leavitt & Bahrami, 1988). The skills levels and the roles of the people at the different organizational hierarchy and the training regimes relevant for the attainment of the planned IT-led transformation become the object of focus in this aspect of the Leavitt Diamond (Bikson & Eveland, 1990). Through that people become aware of their responsibilities within the broader agenda of the organizational change effort. These elements are

very crucial to the success of the prior and during technological change. From the 'people' perspective, the skill set and the knowledge content of the people meant to facilitate the transformation of the organization is considered. It captures the content of the training skills that have been acquired over the years as well as those gained in anticipation of the change intended to impact on the other elements of the organizational change dynamics. The shifting ideologies, belief systems, attitudes and unpredictable social aspects of people behaviour all account for the people dimension of the 'diamond'. It is not quite difficult to expect that these social parts, quite unpredictable as they seem, have the potential to undercut the value of the assumed benefits of the intended change. Sometimes they can also reinforce the expectations of the change, especially when the people find it comfortable and convenient to dovetail their excitements to the process of change. The response of people to change can therefore be mixed; positive, unpleasant and even neutral, depending on the dynamics of the moment such as the psychological orientation of the people at a given period. A scorched-earth opposition can demonstrate resistance to the prospects of the whole socio-technical transformation agenda.

Task/process

The task component, according to the Leavitt's Diamond framework, has to do with the need for the existence of the work unit (H. Leavitt & Whisler, 1958). The content of the task, connected with the conditions of performance, prescribes the expectations of the job as well as the manner for its execution. Part of the nature of the task is a justification for why the 'new' demands for work performance have become imperative and relevant. These find realization in the strategic direction of the organization, defined in such forms novel products and services, creative service levels informed by new capabilities and new efficiency metrics. The nature of the task can be purely IT or IT-driven. Automated systems such as the present focus of this study fall into the automated system category. There can also be mundane or primary task depending on the nature of work at hand. The tasks also spell out the expectations of staff and the mechanics for meaningful work accomplishment.

Structure

The structure of the organisation within which the technology is implemented is important as indicated by the Leavitt's Diamond. Issues relating to the hierarchy in the organisation, the division of work units, the distribution of resources, both material and immaterial and the flow of work and communication within the hierarchy are quite crucial to technological change, as both structured and unstructured methods of communication are needed in implanting change. Given the philosophical orientation of the implementing agency, centralized or decentralized system of structural configuration would have to fit the requirements of the intended transformation. Determining this also has implications for control, coordination and collaborative efforts needed to guarantee a fruitful implementation of the intended project. Inextricably linked with the sense of control, coordination and collaboration of work are the conditions of the geographical location of the command and control structure of the whole work environment and the context of

application. In an era where the ICTs sometimes make distance lose meaning (Cairncross, 2001), it is still necessary to take contextual matters of technology mediated interactions into account because distance is yet to lose its 'enchantment' (Mee, 1898). The structural dimension of the Leavitt's Diagram emphasizes the point about the degree of involvement of all the stakeholders in the transformation process in terms of what their specific tasks are by way of their role in the whole experience.

Technology

Part of the earlier studies on the applications of IT discovered the knowledge that use is predicated on such factors as personal traits, tasks requirements and characteristics, features of the channel used, the position in the organization, among other allied factors (See, for example, Markus, 1988; Rice & Shook, 1990; Steinfield, 1986). Leavitt's Diamond considers technology to demonstrate certain fundamental functionalities and have a certain nature of configuration, constituting the embodied predisposition of the artifact (Kallinikos, 2006). These are the key equipment and processes needed to implement the proposed technology-driven transformation as well as the tools and skills needed to work with it. Part of the dominant rationale for the application of IT as instrumental condition for the organizational change agenda can be captured in three complementary views. The views manifest in affordable but more influential IT, organisational change and the design of new products or supply of quality service by organisations (Bresnahan, Brynjolfsson, & Hitt, 1999). Doubtless, it these three complementary approaches to technology orchestrated change has implications for significant changes in structure, process and labour.

It can be fully automated system such as requiring no human intervention or involvement, it can also be partially computerized operations or sometimes the technological element is heavily de-emphasized to allow some significant human efforts. In this view, it is feasible to allude to the idea that the technological aspect could only be software, hardware or network of communication technologies or a combination of all the three simultaneously. It is fairly within the realms of possibility to speculate that technological tools for the recommended transformation of work can include such materials as seminars, training materials, systems of communication technologies for carrying out the demands and conditions of the 'new' system in the transformation process. It is worthy to argue out the idea that the declining cost of IT capital (relatively speaking), increasing capabilities of the capital of IT, such as is the case of contemporary networked and interconnected platforms, among others combine to put IT at the forefront of organizational change practices.

Methods

The researchers conveniently sampled 420 validators and purposively sampled 80 non validators from the Ghana Education Service and 6 employees of the Controller and Accountants General Department at Accra Head Office. The study was conducted across the Northern and Southern sectors of Ghana. The regions in these sectors were randomly selected using the simple random sampling technique to arrive at three (3) Southern Sector Regions comprising Greater Accra, Ashanti and Western Regions and the three (3) Northern Sector Regions comprising of Upper East, Brong-Ahafo and Northern Regions. Adopting a mixed method approach, data were independently analyzed employing the use of SPSS for the quantitative data and content analysis for the qualitative data. The analysis was deployed by use of means, standard deviations and relative importance index (RII) generated in addition to frequencies. The means standard deviations and the RII were used in analyzing the usage of EPS-V amongst teachers.

However, the qualitative data from the CAGD non-validators data were analyzed by means of content analysis; a method that facilitates a systematic and objective means of describing and drawing conclusions on data collected (Miles, Huberman, & Saldana, 2013). The themes that were derived out of the codes emerged from the transcribed data. The statements that suited these themes were then used for the analysis of the qualitative data. Table 1 below depicts the sampling of the various respondents used for the study.

Table 1 Sampling techniques employed at each level for the study.

Category	Number of interviews	Technique for selection
Validators	420	Convenience sampling
Non-validators	80	Purposive sampling
CAGD	6	Purposive sampling
Regions	6	Simple random sampling

Source: Researchers own construct 2016

Results: Electronic salary Information Accessibility

The access to the electronic information for salary was measured with 4 criteria. Table 2 below portrays the areas used in a descriptive statistical technique to evaluate the E-SPV system access with the respondents being subjected to a Likert scale of (5= strongly agree, 4=agree, 3=neutral, 2=disagree and 1=strongly disagree). With regard to “*A technical person supports me to use this system*” the results showed that 26.4% strongly disagreed with the assertion that they need the support of a technical person to use the system, again, 26.4% of the respondents disagreed to that effect, however, 15.7% of the respondent strongly agreed to the fact that they need the support of a technical person to use the system, also, 11.4% agreed to the assertion and about 10.7% remained neutral. In addition, regarding “*I feel very confident using the system*”, majority (N=111, 26.4%) of respondents agreed to the statement followed by 25.7% who were indifferent to being confident using the system, with 20.7% strongly agreeing to the fact that they feel confident using the system, on the contrary, 10% disagreed and 7.9% strongly disagreed to that effect. Moreover, based on the assertion that “*I need to learn a lot of things to get going with this system*” 29.3% of the

respondents neither agreed nor disagreed, 16.4% of the respondents strongly agreed with 15.7% disagreeing to the statement, 15% strongly disagreed and lastly 14.3% agreed that they need to learn a lot of things to get going with this system. For “*The system is complex*”; majority (N=162, 38.6%) were indifferent, 14.3% disagreed with another 14.3% strongly disagreeing to the assertion made but 16.4% think otherwise by strongly agreeing that the system is complex and the least 10% agreed to that effect. Technically, the study found out that majority of GES employees on the E-SPV system needs adequate training and knowledge to ease its usage, effectiveness and convenience so as to ensure the security and privacy of their salaries as well as their personal information. These results are in agreement with Nzaro & Magidi’s (2014) study on the subject which concluded that people are limited due to lack of knowledge on electronic payments while organizations suffer from the lack of expertise to handle its operations to educate employees on its benefits.

Table 2 Electronic salary information accessibility

Statements	SA	A	N	D	SD
A technical person supports me to use this system	66(15.7)	48(11.4)	45(10.7)	111(26.4)	111(26.4)
I feel very confident using the system	87(20.7)	111(26.4)	108(25.7)	42(10.0)	33(7.9)
I need to learn a lot of things to get going with this system	69(16.4)	60(14.3)	123(29.3)	66(15.7)	63(15.0)
The system is complex	57(13.6)	42(10.0)	162(38.6)	60(14.3)	60(14.3)

Source: Field Survey, 2016

Security and privacy of employees’ information on E-SPV

On the security and privacy of employee information, teacher’s views were sorted. Table 3 below deployed a descriptive statistical method to analyze the information by subjecting it to a series of statement which is measured using a Likert scale of (5= strongly agree, 4=agree, 3=neutral, 2=disagree and 1=strongly disagree) and using frequencies and percentages the results of the study is presented as follows: “*It is safe to use the system*” 49.3% neither agreed nor disagreed, 15.7% of the respondents agreed that it was safe to use the system, next was 12.9% who strongly agreed to the assertion with respondents who strongly disagree and disagree accounting for 10% and 7.9% respectively. More so, with “*I am sufficiently informed about security in the E-SPV*” majority (N=159, 37.9%) of the respondents strongly disagreeing to that assertion, another 29.3% disagreed with respondents who were neutral and strongly agreed being 10% each and lastly, 7.9% agreed to the assertion.

Also concerning *Personal information security* half of the respondents were indifferent to the assertion that personal information is secure, next was 15% who agreed to the assertion, this was followed by 10.7% who strongly disagreed to that effect, similarly, and those who disagreed accounted for 9.3% and finally, another 9.3% strongly agreed to it, that personal information is secure. Moving on to the assertion “*Personal information can be accessed at all times*” 35% of

the respondents were neutral, 22.9% of the respondents strongly agreed that the system can be accessed at all times with 15% strongly disagreeing to that effect, 12.1% disagreed and 11.4% agreed to the assertion that the system can be accessed at all times. Though Hamed and Berger (2012) asserted that it is imperative for employers to equip themselves and improve their knowledge in electronic payment system in order to appreciate and adopt, it is vital to at least inform employees about any EP which involves them. The study revealed that 182 representing 67.2% of non-validators strongly disagreed or disagreed that they were sufficiently informed about the E-SPV as employees, confirming their insufficient knowledge of the system as indicated above. However, Ondieki & Okenyuri, (2014) found that, though the use of EP has become ubiquitous due to its convenience comfortability, most people do not use EP at supermarkets and mobile mats. The basis for non-usage was attributed to either forgetfulness of passwords or refusal. Moreover, a more striking reason Ondieki & Okenyuri (2014) discovered for non-usage was the fact that people have become aware of e-fraud and hence fear for fraudsters whose intent is to cunningly observe their PIN numbers whereas others shy away from public usage perceiving that they might be charged an exorbitant amount for using it. Affirming the presumptive assumptions of the perceptions above, it was confirmed that employees are charged for every pay slip they print or Internet access. The study however, contradicts with Ondieki & Okenyuri (2014) since most respondents strongly agreed that, E- SPV is safe when using the system. One CAGD official during interview also revealed that, *the system is safe for use and it also ensures security. Hence, personal information of employees is secure and can be easily accessed at all times.*

Table 3 Security and privacy of employees' information

Statements	SA	A	N	D	SD
It is safe to use the system	54(12.9)	66(15.7)	207(49.3)	33(7.9)	42(10.0)
I am sufficiently informed about security in the E-SPV	42(10.0)	33(7.9)	42(10.0)	123(29.3)	159(37.9)
Personal information is secure	39(9.3)	63(15.0)	210(50.0)	39(9.3)	45(10.7)
Can be accessed at all times	96(22.9)	48(11.4)	147(35.0)	51(12.1)	63(15.0)

Source: Field Survey, 2016

Challenges of using E-salary payment voucher system

The study explored whether users of the e-payment system faced any challenges and the results in Table 4 showed that majority (N=297, 70.7%) of the respondents faced one or more of the following challenge(s): salary delay; difficulty in accessing the Internet; lack of computers; limited understanding or knowledge of basic computer operations; erratic electricity outages; lack of IT infrastructural support at workplaces, and stolen identity, when assessing electronic pay slip information. while 29.3% reportedly said they face no challenge. The study discovered that in spite of the fact that electronic means of undertaking transaction has gained prominence in these recent times, users have their own reservations about some of the constraints or challenges associated with the new system. Employees showed satisfaction towards being able to use their mobile phones to do financial transactions and also added that users have more control over their activities but resented inadequate security countermeasures owing to the ubiquitous dimension that smart phones have assumed. Again employees argued that with the advancement

in technology and growth in applications, the threat of using mobile phones in transacting businesses is increasing at an alarming rate and so is e-fraud. However, in the study some teachers reveal that they have no modern or compatible phones to access their information on them so therefore, resort to commercial sources to that effect.

According to Levi (2000), 'the global networks, credit, debit and charge cards can never avoid the risk of crime entirely'. The individual crime victims, merchant service providers and retailers always encountered the conflict of interest. The study supports the views of Larry as the E-SPV system has it challenges that need to be addressed. Akintoye & Araoye (2011), also confirmed that the degree of e-fraud ranges from less to severe damage including the extrapolation of peoples' identity and passwords which are most time used as a weapon to blackmail people of high reputation.

Table 4 Challenges of using E-payment voucher

Variables		Frequency	Percent
	Yes	297	70.7
	No	123	21.3
Total		420	100.0

Source: Field Survey, 2016

Ways of addressing challenge (s)

From Table 5, 33.6% of the respondents asserted that they address challenges regarding the system by themselves, 18.6% affirmed that they consult the service providers, followed by 31.5% who seek help from an Internet assistant, another 10% result to friends and families and lastly 6.4% fall on other unspecified means to address the challenge. The study affirms the need for security and privacy check since majority of employees' salary information are exposed to the general public in seeking for redress to a challenge (s) that arises as a result of the implementation of E-SPV. This however, is based on the fact the system lacks the basic infrastructure for effective implementation especially at workplaces. It is also affirmed Taddesse & Kidan, (2005) that, e-payments infrastructure such as Internet and mobile networks are not widely available in Africa.

Table 5 Way of addressing challenge (s)

Variables		Frequency	Percent
	By myself	141	33.6
	By the service providers	78	18.6
	By a friend/family member	42	10.0
	By an Internet cafe assistant	132	31.5
	Others	27	6.4
Total		420	100.0

Source: Field Survey, 2016

Duration of addressing challenge

With regard to how fast challenges are addressed, the results are presented in Table 6 as follows: the greater proportion (N=249, 59.3%) of the respondents affirmed that it took them two-three days to rectify problem (s), 21.4% reportedly said it depends on the type of challenge, 9.3% said

it took less than a day with 6.4% saying challenge (s) took more than a day and finally 3.6 said it lasted for a week or more. This implies that rectification of challenges regarding the system takes several days. The E-SPV however, makes provision for complains/suggestions, contacting CAGD, change of passwords among others. But, due to lack of or inadequate knowledge, infrastructure, and long distance, on the part of non-validators, it takes them longer time or makes them rely on other sources to address their challenges.

Table 6: Duration of addressing challenge

Variables	Frequency	Percent
Within a day	39	9.3
more than a day	27	6.4
2/3 days	249	59.3
a week or more	15	3.6
it depends	90	21.4
Total	420	100.0

Source: Field Survey, 2016

Frequency of challenges

The study explored the frequency of challenges in using the E-SPV system using a scale of very often, often and rare to measure their frequency rates. From Table 7, 55% of the respondents apparently said they often experience salary delays, 22.9% stated that they rarely experience salary delays and 12.1% said they experienced salary delays often. Also regarding stolen identity; majority (N=321, 76.4%) of the respondents emphasized the point that stolen identity in using the e-payment system is rare followed by 10.7% who believed that stolen identity happens often with just 0.7% saying that it happens very often”.

In most African countries the required infrastructure, legal and regulatory framework for electronic payments are lacking (Taddesse & Kidan, 2005). In particular, e-payments infrastructure such as Internet and mobile networks are not widely available in Africa. Moreover, banks and other financial institutions are not adequately automated to enable e-banking and e-payment (Kumaga, 2011) . This finding affirms Taddesse and Kidan’s (2005) study that, e-payments infrastructure such as Internet and mobile networks are not widely available in Africa, since majority often had difficulty in accessing the Internet. Moving onto difficulty in accessing Internet; 51.4% said they often find it difficult in accessing Internet, respondents who believe it happen very often followed with 27.1% and 12.9% said it is rare.

Non-availability of computers at work places; the greater proportion (N=159, 37.9%) of respondent believe that Non-availability of computers at work places is experienced very often with 32.1% reportedly saying it happens often and lastly 17.1% said it rarely occurs. Regarding travelling for a long distance to access Internet especially in the northern regions 39.3% reported they rarely travel long distances, moreover, 33.6% said they often travel long distance to access Internet with 17.1% saying that very often they walk long distances just to have access to Internet. Finally, concerning inadequate know-how on the use of computer by non-validators 47.1% representing the majority said they often have inadequate knowledge in computer usage, 23.6% very often struggle to use computers and only 20.7% is efficient in using computers.

According to a senior officer,

'the system works with Internet, and the complaints of some employees are that they travel long distance to get access to Internet and most often are not able to meet the 48 hours' period within which the system is opened for validation'.

Another official of CAGD said,

'infrastructure has not been provided for any department but, departmental heads and management units were made to understand the need for the provision of computers and Internet to enable the effective use of the E-SPV system'.

Table 7: Frequency of challenges

Statement	Very often	Often	Rare
Salary delay	51(12.1)	231(55.0)	96(22.9)
Stolen identity	3(0.7)	45(10.7)	321(76.4)
Difficulty in access Internet	114(27.1)	216(51.4)	54(12.9)
Non-availability of computers at work places	159(37.9)	135(32.1)	72(17.1)
Long distance travelling to assess Internet	72(17.1)	141(33.6)	165(39.3)
Inadequate know-how on the use of computer by non-validators	99(23.6)	198(47.1)	87(20.7)

Source: Field Survey, 2016

Desiring to stop using electronic payment voucher due to the challenges

From Table 8 a significant 70.7% asserted that they do not wish to stop using the electronic payment voucher in spite of the challenges they experience due to the fear of losing their salary, its convenience, easy to use and the cost effectiveness of it. However, 24.3% concede that they wished to stop using the electronic payment voucher due to the numerous problems associated with its use. This implies that the electronic payment system is gaining wide range acceptance despite the challenges experienced by users.

Table 8: Desiring to stop using electronic payment voucher due to the challenges

Variables	Frequency	Percent
Yes	123	29.3
No	297	70.7
Total	420	100.0

Source: Field Survey, 2016

Relative Important Index (RII) on E-SPV system usage

Table 4.11 deployed a descriptive statistical method to evaluate the Electronic system usage by subjecting it to a series of statements which were measured using a Likert Scale of (5= strongly agree, 4=agree, 3=neutral, 2=disagree and 1=strongly disagree) to generate central tendencies of means (M), standard deviations (SD) and relative important index (RII). “*I feel very confident using the system*” responses gathered recorded a (M=3.46, SD=1.20 and RII=0.63) which rendered it a low important index; regarding “*I need to learn a lot of things to get going with this system*” the results obtained a (M=3.02, SD=1.31 and RII=0.55) which is less significant; moreover with respect to “*The system is complex*” the results achieved a (M=2.94, SD=2.60 and RII=0.53) which was also less significant and finally “*A technical person support me to use this system*” obtained a (M=2.60, SD=1.46 and RII=0.47) making it also less significant. This study reveals that employees need adequate training on how to use the system. This study from the revealing results also concludes that employees of GES were not properly included or adequately informed in the design and implementation of the new system.

Table 10: RII on Electronic system usage

Statement	M	SD	RII	Rank	RII index
I feel very confident using the system	3.46	1.20	0.63	1 st	Low important
I need to learn a lot of things to get going with this system	3.02	1.31	0.55	2 nd	Low important
The system is complex	2.94	2.60	0.53	3 rd	Low important
A technical person supports me to use this system	2.60	1.46	0.47	4 th	Low important

Source: Field Survey, 2016.

To measure the relative importance of each factor or variable used, indices of range 0.85-1.00= High important; 0.65-0.84= Medium important; 0.00-0.64=Low important. The results of the relative importance indicate that even though the respondents attach some importance to the usage of the EPV, the importance is of low importance.

Research Implications

People

The study revealed that the introduction of the EPS-V had a lot of challenges because the teachers were not used to the system. Again they did not have the necessary skills in ICT to do the validations themselves hence many resorted to the use of Internet café and others who had a bit of skills in ICT to do their validations themselves did not have access to the Internet and there had to seek for help. This resulted in the exposure of their passwords of these individuals. It is therefore necessary that the needed adequate training be given to these teachers to help improve the implementation of this change.

Again, CAGD should provide training on the use of electronic payment vouchers by providing technical know-how for non-validators, on how to overcome power outages, non-availability of machines and difficulties in Internet accessibility. Moreover, checks should be made on E-SPV systems' frequencies on how to develop a strategy to counter stolen identity, salary delay and other related problems.

Task or Process

Within the task or process the study revealed that the teachers were not quite conversant with the details of the process as they were not imbued with sufficient IT skills. For instance during the validation period, the head-teachers experienced difficulties in submitting the validated list to the circuit supervisors electronically. There is therefore the need for head teachers to be sensitized on the adoption, utilization as well as the benefits of electronic payment voucher system based on it cost effective, ensuring security of personal information, reliability, and affluence of use, convenience and accessibility of information. This is to ensure the boost of their interest in the process so as to go the extra mile in trying to help the system work in a more efficient manner.

Structure

With regard to the structure, the study identified the point that the payment system was introduced at all levels within the GES hierarchy hence there is the need for adequate training at all levels to help build a strong foundation for the implementation of the electronic payment system.

Technology

The study also revealed that the technology needed for the use of the EPS-V needed computers, Internet access and electricity. These resources were not available in the remote villages hence during validation periods many had to travel from villages to the nearby towns where they can access these resources. This created some inconveniences for the people in terms of the implementation of this payment system. There is therefore the need for the government to take a second look at the implementation process and provide at least some resources at the localities. This could be located at the district centers so that during validation periods these teachers can access them and do their validations without stress. Again the employees/ teachers must be consulted and regularly be educated on the electronic salary payment voucher system for their input or views to enable them deal with some of the fundamental problems associated with the system. Moreover, the current Internet infrastructures in the country do not adequately support the system especially those living in the remote areas. Service providers should therefore be collaborated with to improve the existing network infrastructure for the success of the electronic salary payment voucher system in Ghana.

Again, the implementers, CAGD, should ensure that teachers are provided with computers, printers and modems or network cards so that they can do their validation and printouts to safeguard security, privacy and or possible hijack by electronic fraudsters.

Conclusions and Future Research Directions

The study concluded that teachers within the educational sectors are indeed faced with enormous challenges in accessing the E-SPV. Prominent among them are fluctuations in the power system

which is a challenge in Ghana. This leads to delays in validation of teachers' slips and in the worse scenario, it leads to non-payment of their remuneration for the month in question. The study further concludes that lack of adequate knowledge in the handling of electronic applications has resulted in the mal-handling of e-salary information and e-pay vouchers. This has led to stolen identity where people use the codes of others to access their pay information. Also because the validation period is time bound and beyond that time period accessing the system becomes impossible hence any other alternative means used to access pay causes undue delays in receiving salary.

Moreover, logistics is another challenge facing teachers and validators under the GES. Most schools under the GES lack logistical equipment like computers and Internet services to validate workers' pay voucher and due to that, they have to walk long distance to access Internet services mostly at cafes which increases their risks level when third parties get hold of their PIN codes. In addition, these services are offered for a fee which is paid by the teachers own money without any refund and in some cases they rely on mobile phones to validate.

Another challenge reported by the teachers was the fact that the E-SPV is unfriendly to the physically impaired. Teachers in this situation rely on friends, colleagues or commercial sources to help them with this system thus exposing their information and risking their transactions on the system. Given the realities of these enormous challenges, future research is recommended to look into the task structure of the implementation to ensure that the task process is well established to help a smooth implementation.

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