

## **Exploring Organisational Culture and Challenges towards Integration of Technology: The Perspectives of Policymakers in COVID Era**



**Yaw Odame Gyau<sup>1</sup>, Ernest Kwabena Gyan<sup>2</sup>**

<sup>1</sup>Snr. Lecturer, Ghana Institute of Journalism, P. O. Box GP 667, Accra, 32 Gamel Abdul Nasser Rr. Osu, Accra, Ghana.

<sup>2</sup>Snr. Lecturer, Accra Institute of Technology, Caprice, Accra.

**ABSTRACT:** Although the phenomenon of technology is gradually being integrated into tertiary education in Ghana, challenges impeding effective integration are endemic in an environment where organizational culture is determinant. Challenges include lack of devices and cost involved, network and data bundle and incessant power supply. Organisational culture and mind-set of the key actors towards integration of technology, is an imminent challenge. From the Interpretivist paradigm, this is an exploratory study of the perspectives of Policy-makers towards the organisational culture and challenges of integration. Qualitative method through in-depth interviews was adopted in six (6) accredited public universities. The study found that, generally there is a culture of support for integration of technology and Lack of devices and costs involved were the biggest challenge to both lecturers and students. Network and Connectivity is the most wide-spread institutional mechanism that has been put in place in the public universities.

**KEYWORDS:** Organisational Culture, Challenges, Integration of Technology, Public Universities, COVID19.

### **I. INTRODUCTION**

To ensure the seamless integration of learning technologies into academic programs, integration of technology into curriculum is a major problem in educational technology that needs immediate attention. Technology integration is an ontological phenomena that has to be thoroughly investigated and comprehended in the context of higher education. The ecology of education is progressively integrating technology into every area. During the Covid-19 epidemic, the difficulty of integrating innovation and dealing with change in an organizational setting in education has become even more apparent (Barrett & Hinings, 2015). The transition to online learning at institutions during that time was mostly driven by policymakers and implementers. There is, however, a dearth of research on senior academic staff perspectives of technology integration in academic programs generally.

The taxonomy of the Technology Integration Matrix (FCIT, 2017), offer some prerequisites, plus additional activities, that should lead school administrators to pragmatically execute learning technologies into mainstream education. For the purpose of this study, Integration is defined and operationalized based on the five attributes of leaning environments and the five levels of technology integration as prescribed by the FCIT, 2017, in the Technology Integration Matrix.

The purpose of this research was to understand the phenomenon of Integration of Technology among Policy-makers and Implementers in Higher Educational Institutions (HEIs) in Ghana during the COVID era (2021); to explore the perspectives of Policy-makers and Implementers (IT Support Staff) about the role of Organisational culture and the challenges that affect the integration process at six (6) top public universities in Ghana.

The problem is that, Policy-makers and Implementers (IT Support Staff) in public universities, form the core of principal leadership in the process of integrating technology, and their mandate goes a long way to affect the effective infusion of technology into academic programmes. According to Awidi (2008), the culture of Ghanaian public universities was identified as a major barrier to adopting e-learning systems. By policy, the amount of credit hours acquired in a discipline and used toward a degree is determined by the physical presence of a student. By the rule, all students must show up to all lectures, seminars, workshop sessions, and practical lessons required for the courses they registered for in order to sit for the final exams. Any student who misses 14 or 21 days in a semester's worth of lectures, tutorials, and practical classes without getting permission is regarded to have failed to meet the attendance standards for the semester exams. This regulation obviously, have over the years conditioned the minds of students and impeded the infusion of technology, while lecturers comply to administer their duties in this preconditioned culture. Such regulation or policy, also goes a long way to instigate or foster the culture of resistance to change,

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not only among lecturers but students as well. More so, integrating technology into tertiary education in Ghana, is impeded by a myriad of challenges. From the Interpretive standpoint, this study explored the organizational culture and challenges of Policy-makers, IT Support Staff, Students and Lecturers in the process of infusing technology into academic programmes in the public universities in Ghana.

Objectives of the research were primarily, to examine the organizational culture among the key stakeholders in the Integration of Technology into academic programmes. What are the socio-cultural issues of the key actors in the integration process? Secondly, to determine the challenges facing students and lecturers in their quest to adopt and adapt to technology. What are the challenges facing students and lecturers in the integration process? Thirdly, to explore the Institutional Mechanisms that have been put in place to mitigate the challenges. What are Institutional interventions that have been instituted to mitigate the challenges in the process of integrating technology? The extant literature presents contextual gaps that this study sought to fill because previous studies in Ghana scantily discussed the role of organizational culture in the process of integrating. Furthermore, the challenges encountered by students and lecturers in a COVID era, remain a gap and this study sought to fill that gap.

### **II. LITERATURE REVIEW**

The adoption of ICTs in higher education is a challenging process that demands a lot of resources. The majority of Ghana's public institutions lack the necessary resources, which puts "barriers" in the way of successfully integrating technology into the teaching and learning process. Integrating technology into mainstream education, requires support for students and lecturers as they engage in learning activities that support 21st Century knowledge and skill acquisition. The International Society for Technology in Education asserts that effective technology integration occurs when the use of technology is routine and visible, accessible and available for the work at hand, supports the curriculum goals, and aids the students in successfully achieving their goals. That hints at a broader perspective on technology use and the requirements for utilizing technology in education to provide the greatest impact and transformation.

In this era of rapid technological innovation, it is crucial to comprehend how organizational culture affects the use of instructional technology in institutions. Every institution's technological innovation may be curtailed by organizational or institutional culture. For an innovation, like educational technology, to properly diffuse throughout higher education institutions, it must be fully implemented, rather than permitting opposition and cultural differences to hinder integration. Sahin et al. (2006) contends that the idea of innovation diffusion is the best framework for examining how ICTs are being incorporated into higher education services. Additionally, the dissemination of innovations has been associated with the development of ICT integration within educational services (Rogers, 2010). Every culture is unique, and not every society accepts or adopts technologies in the same way. According to Leidner and Kayworth (2006), culture can have an impact on how successfully information technology is adopted and used. This is premised on the fact that individuals have different characteristics that follow a set of stages to integrate a particular IT system / innovation (Ankem, 2004; Kirkup and Kirkwood, 2005; Tabata and Johnsrud, 2008). The potential perceived value of an innovation will affect the individual's decision on whether to adopt it at an early stage of the integration process or not to adopt it. Therefore, to ensure successful dissemination and infusion of technology into academic programmes, free from cultural differences and opposition, Policy-makers and Implementers must seriously examine cultural differences and related difficulties. Slay (1997), on the other hand, took a broader perspective of learning in technology enhanced environment. She urged policy-makers to analyze learning environments and judge the impact of culture from the perspective of human activity systems when designing learning environments for multicultural settings.

In reviewing Challenges Affecting Integration of Technology into public universities, African scholar, Diallo (n.d.), Director of the United Nations Educational, Scientific and Cultural Organization (UNESCO), painted a gloomy picture when it comes to the use of (ICTs), such as electronic e-mail, World Wide Web, learning management systems, computer conferencing, among others. Concerning the integration of ICTs into higher education, Diallo endorsed four key elements: (a) teacher preparation; (b) curriculum; (c) distant learning; and (d) educational policy, planning, and management. While these elements are required for integration, if not managed, they can also act as obstacles or problems. The integration of technology in higher education will face few obstacles if the major players in these four components are forced to work well together. Saade (2005) indicates that there are still a lot of concerns that are frequently caused by technological variables, such as access, connection, and internet familiarity problems.

According to Afari-Kuma and Tanye (2009), in order for Public Universities to fully benefit from ICTs, they must seriously consider the difficulties and barriers they face, including those related to funding, maintenance, value for money, and overall technological integration. Additionally, a well-managed and planned ICT installation will pay for itself within a few years and have an effect on the universities' social and economic standing. According to Qureshi et al. (2012), English competence and power outages were the two biggest obstacles to the successful integration of e-learning at a Pakistani institution. Only if other crucial ICT concerns facing Ghanaian education are addressed properly that the full promise of technology be realized (Obiri-Yeboah et al. 2013).

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Similarly, Bonsu et al. (2013) state that important obstacles to technology adoption at HEIs include lack of access to computers, poor ICT infrastructure development, the expense of training materials, and a lack of ICT competence skills. In their study of the integration of e-learning into curriculum delivery at the university level in South Africa, Dagada and Chigona (2013) found that many lecturers lack the computer self-efficacy necessary to make informed decisions about the teaching and learning platform that will best support their pedagogy. As a result, most universities have not yet adopted e-learning platforms. Low computer self-efficacy has been discovered to be a barrier to integration, for this reason.

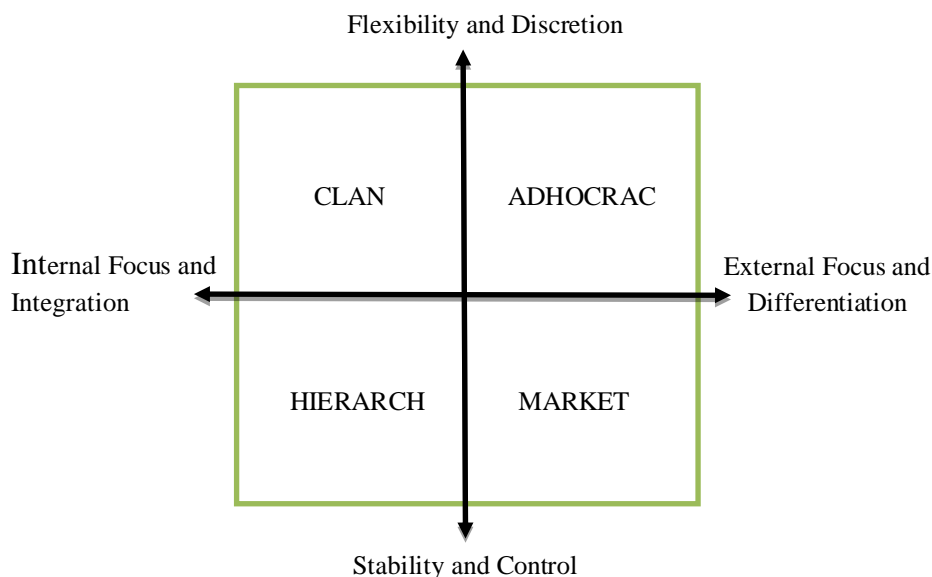
Obiri-Yeboah et al. (2013) examined the trend and use of ICT adoption in Ghana and its impact on teaching, research, and learning in tertiary institutions in Ghana in their paper titled, *Exploring the Trend of ICT Adoption in Tertiary Institutions in Ghana: A Case Study at Kwame Nkrumah University of Science and Technology (KNUST)*. The authors found a worrying trend that had spanned over 10 years. They state that there have been several attempts over the past ten years to provide African institutions with the ICT infrastructure they need to teach computer literacy and bolster teaching, research, and learning. These efforts were followed by attempts to fully integrate ICT into educational, research, and administrative processes, but the progress had been very slow. Blaming the problem on a lack of accessible, trustworthy connectivity with insufficient bandwidth, the resistance of instructors and pupils to using ICT, as well as an unstable electric supply. ICT programs given on campuses should be customized to a certain academic subject, the authors said at the conclusion of their study. For instance, engineering students can be taught Auto-CAD and business students thought business related software applications.

According to Rivers et al. (2015), there are a number of obstacles in the way of a seamless integration of technology into the curriculum. They claim that obstacles to the proposed widespread adoption of technology exist in part because most higher education institutions have very limited technological capabilities and access to basic resources like electricity, equipment, and funding; additional obstacles include brain drain, improper use of ICT, and a colonial mind-set. Assessment of Challenges in Distance Education was a topic of study for Badu-Nyarko and Amponsah (2016) at the University of Ghana. According to the authors, major challenges faced by tutors included inadequate training, a lack of financial motivation, students switching between tutors, inadequate time allotted for tutorials, late student attendance, malfunctioning public address systems, late module delivery to students, and an overload of modules that needed to be handled within the semester.

Among the upfront challenges to integration in Ghanaian universities, one can quickly pinpoint lack of material access to learning technologies, and lack of experience, skills, and opportunities to use ICTs. As one of the challenges that is difficult to overcome, Diallo (n.d.) noted that sometimes "technology can also compound frustrations." Recognizing the potential for damage, the Global Alliance for ICT and Development (GAID) has echoed Diallo's concerns. Macerda (2020), found that there are seven main challenges to technology integration: technophobia, lack of time, absence of planning, and lack of incentives, lack of evaluation, work saturation, and university accreditation model.

**Theories underpinning this research** are the Constructivist Theories of Perception, Competing Values Framework and the Institutional Theory. The Constructivist Theories of Perception is the first theoretical foundation for the perceptions of policy-maker in this study. Helmholtz (1821–94) argued that, on the basis of the sensations we receive, we draw conclusions about the nature of the object or event that the sensations are most likely to represent as cited by Rookes and Wilson, (2000). Eysenck and Keane (1995) have suggested three shared assumptions about perception: Perception is an active and constructive process involving more than the direct registration of sensations; Perception occurs indirectly as the end-product of the interaction between the stimulus input and the internal hypotheses, expectations and knowledge of the observer. Motivational and emotional factors can also play a part in this perceptual processing in every educational institution and the perceptions of policy-makers is very well situated in this context.

The Competing Values Framework is a set of complex quadrants which was introduced by Quinn and Rohrbaugh, 1983; Cameron and Quinn, 2006), to explain the four main dimensions of organisational culture and the values that each wield. The purpose of the Competing Values Framework is to diagnose and facilitate change in organizational culture. (Cameron and Quinn, 2006). Over the past few decades, academics have presented a wide range of organizational culture dimensions and characteristics. Beyer and Cameron (1988), Martin (1992), Trice and Beyer (1993), and Cameron and Ettington (1988) all provide thorough evaluations of a large portion of that literature. Kotter and Heskett (1992), Sathe (1983), Schein (1984), and others have argued that cultural strength and congruence are the primary cultural variables of interest. Hofstede (1980) focused on power distance, uncertainty avoidance, individualism, and masculinity. A photographic and iridescent identity dimension was recognized by Alpert and Whetten (1985) as being crucial when understanding culture. A strong-weak dimension and an internal-external focus dimension were proposed by Arnold and Capella in 1985. The fact that corporate culture is so vast and inclusive is one reason why so many dimensions have been proposed; because Organisations consists of a complicated, intricate, wide-ranging, and nebulous collection of elements (Cameron and Quinn, 2006). The dimensions are indicated in figure 1;



**Figure 1. Competing Values Framework**

The Culture of Hierarchy was introduced by German sociologist named Max Weber studied government organizations in Europe in the early 1900s, and his research served as the foundation for the first organizing strategy in the contemporary period. At the beginning of the 20th century, organizations confronted a significant challenge: how to create commodities and services for an expanding complex society. Rules, specialization, meritocracy, hierarchy, separate ownership, impersonality, and responsibility are seven traits that Weber (1947) described as the classic attributes of bureaucracy to achieve this. Today, Public universities in Ghana operate the Hierarchy type of organisational culture that is modelled after the seven traits that Weber introduced. However, at the onslaught of the COVID19 pandemic, where universities were thrown into crisis, Management and Policy-makers had to adapt to the Adhocracy type of organisational culture in order to keep serving their customers. As the developed world shifted from the industrial age to the information age, long before COVID, Adhocracy is the ideal type of organizing that emerged. The tempestuous, fast moving conditions of the COVID19, halted academic work in the middle of the semester, and the management teams and policy-makers in the various public universities, had no option but to switch from the Hierarchy type to the Adhocracy type of organisational culture and take ad-hoc decisions for successful completion of the academic year. Policy-makers had to quickly introduce new initiatives that are ground-breaking innovations to drive IT Staff and other administrators to develop new products and services and plan for the future. Management's main responsibility was to quickly adapt and adopt integration of technology into curriculum, especially in universities where technology integration was at its lowest point. So focus was placed on developing the internal Network architecture and Connectivity in order to be able to connect with students remotely.

New institutional theory posits the behaviour of the key actors in an organization and the environment in which they operate and examines the collaborations between them and how it affects the organisation's structure, characteristics, and patterns of behaviour. An important idea in institutional theory is the term "organizational field," which describes the context in which an organization functions. As a result, the educational sector, for example, is seen to be founded on societal ideals (Meyer, 1992; Meyer et al., 2007; Meyer and Ramirez, 2012). Policy-makers and Implementers at public universities in Ghana operate and steer innovations in educational environment. They are also considered to play a significant role in leading and implementing technological innovation. To succeed, they need to navigate between technical and visible expectations, which are often difficult.

Many educational systems choose to deploy technological innovation using the "Islands of Innovation" paradigm in order to resolve this contradiction. There are two ways that islands of invention might be designed: (1) Top-down approach, where policy is imposed by the policy-makers. This results in little stakeholder participation in the process, and innovation is implemented in compliance with the standards and procedures outlined from above; (2) Bottom-up approach, where policy is driven by local groups of implementers/stakeholders (e.g., teachers, principals, educational magnates) that implement contemporary needs. Public universities in Ghana are mostly inclined towards the Top-down approach where policy is imposed with specific guidelines for the local groups of staff to implement and fulfil the objectives of the policy. Fullan (1994) contends that a coordinated mix of top-down policies and bottom-up actions is necessary for successful change. In other words, reform ideas come from the educational institution, but how they are executed is determined collaboratively through a dialogic thinking process.

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### **III. METHODOLOGY**

Policy-makers and Policy implementers (IT support staff) were selected from each of the six accredited public universities in Ghana. According to the National Accreditation Board (NAB) there are fifteen (15) accredited public universities in Ghana. This study purposively sampled six (6) based on their rank as top universities, integration of technology status and geographical/regional representation. The population is 120 Policy-makers and Implementers in 6 accredited public universities. Sample size was 17 Policy-makers and Implementers drawn from a total of 120 Policy-makers and Implementers (IT Support Staff). From a review of many qualitative research studies, when studying phenomenology, the grounded theory prescribes a sample size of 20 – 30 respondents. (Creswell and Poth, 2018; Charmaz, 2006). This study sampled 17 Policy-makers and Implementers instead of the initial target of 20, due to the fallouts of some specific personnel which declined the interview request due to health issues pretty much associated with the lingering on of the COVID19 pandemic. Sampling techniques used were Purposive sampling and Stratified Random Sampling technique. Among the Policy-makers and Implementers, stratification considered the gender; male and female, status/rank but subject to the number of staff consisting a strata and the knowledge of subjects under study (Cresswell, 2018).

Data collection method deployed the use of telecommunication to conduct the interviews from March to October 2021. Due to ethical clearance, a letter of introduction, requesting interviews with the participants, was sent to the office of the Registrars of the various universities and by extension to the Vice Chancellor's office in some cases, depending on the bureaucratic culture in all of the six selected public universities. Consequently, management authorized the requisite faculties, institutes and departments to provide the high-ranked officers to be interviewed; they were in their designated portfolios as Pro-vests for education, IT Directors, and IT Support Staffs (one in each university). In the event that appointed interviewee declined, the college/faculty was asked to recommend another senior staff member, therefore using the snowball method (Noy, 2008). In order to confirm the legitimacy of the study, each participant received a memo introducing the interviewer and stating the purpose of the research. All participants were contacted beforehand to arrange for a convenient interview time. If the response was positive, an interview was scheduled with the consent of the participant.

The interviews were relatively difficult to arrange since these high ranked officers run shift system which varied their work schedules due to the COVID -19 new work policies. Thus, they were partially in the office about half a day on average, making it necessary to interview them not in-person but remotely through telephone. And because almost all participants were not comfortable with the face-to-face interview, for fear of a possible COVID-19 infection, they opted for telephone interviews though the ZOOM telecommunication video conference app, of which participants were familiar with operating. Thus, these interviews were conducted via ZOOM with the same question guide and a memo log. Pursuant to this arrangement, each of these interviews which lasted 60 to 90 minutes were done successfully across the six universities. While conducting interviews in-person is ideal in principle, it is always important to adapt to what can be done in practice, and telephone interviews was most effective in the COVID19 era.

#### **Instrument**

The instrument, Interview guide, was created based on the Laddering method (Blake, 2004; Bourne and Jenkins (2005) and Means-End Chain model of Attributes, Consequences and Values (ACV) which was structured into three sections; Attributes of Perception and attitude section; Consequences of the challenges and acceptance of technology section and finally the Values of the variables in the TIM. Validity and Reliability of the instrument was achieved by pre-testing and piloting of the instrument, through the scrutiny of six experts in the Educational and Instructional technology field; therefore subjecting the interview guide to intense screening which led to the validation and invalidation of some of the questions. By pre-testing, Policy-makers from another public University, were interviewed through the ZOOM Conference App to ascertain the validity and reliability of the interview guide and the interview via ZOOM. This led to further screening and dropping of some questions, which were either deemed to be invalid or repeated.

#### **Data Analyses**

The data, collected through interviews, were thematically-analysed by coding data, identifying, and relating the themes and sub-themes, that is, open, axial and selective coding were conducted respectively, and facilitated by a qualitative data analyses tool - using NVIVO software (version 12). The thematic analysis was conducted in accordance with a six-stage process proposed by Braun et al. (2019). These stages included familiarisation with the data, creating initial codes, searching for themes, revising themes, defining and naming themes, and writing the report.

### **IV. RESULTS AND ANALYSES**

The main objective that this study sought to achieve was to explore the current challenges that hinder the integration of technology into academic programmes in the selected public universities. To address this objective, the Policy-makers and Implementers were



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asked to respond to pertinent questions. The data gathered from the respondents of the study in response to each of these questions were coded into themes. This section presents the categorised results emerging from the analysis of the results.

### Demographic Analyses of Qualitative Data

Demographic Profile of Policy-makers and Implementers are detailed as follows.

**Table 1. Demographic Profile of Policy-makers and Implementers. (Source: Field data, 2021)**

Variable	Descriptive	N	(%)
<b>Gender</b>	Male	14	82.4
	Female	3	17.6
<b>Level of Qualification</b>	Professor	2	11.8
	Doctorate	8	47.1
	Masters	7	41.2
<b>Public Universities Representation(17)</b>	UPSA	3	17.6
	UG	3	17.6
	UEW	3	17.6
	UDS	2	11.8
	KNUST	3	17.6
	UCC	3	17.6
<b>Regional Distribution</b>	Greater Accra Region	6	35.3
	Central Region	6	35.3
	Ashanti Region	3	17.6
	Northern Region	2	11.8
<b>Work Experience</b>	7 - 15years	11	64.7
	16 - 32years	6	35.3
<b>Interviewee Ranks</b>	Policy-makers	8	47.1
	Policy Implementers	9	52.9

### Challenges facing Students and Lecturers in the Integration process.

First and foremost, the researcher sought to explore the challenges that students and lecturers face in accepting and adjusting to learning technologies for integration of technology into the Academic Programmes of Public Universities in Ghana. The data analysed from the participants are summarized as follows.

**Table 2. Policymakers' perspectives of the challenges that Students and Lecturers face in the integration process.**

Themes	Code Frequency	Code %
Lack of Devices and Cost involved	11	13.58%
Network and Connectivity	10	12.35%
LMS and Technology know-how	10	12.35%
Lack of Technical Support	8	9.88%
Lack of Power Supply	8	9.88%
Lack of ICT Skills	7	8.64%
Lack of IT Infrastructure	7	8.64%
Lack of Data bundles	6	7.41%
Lack of Training	5	6.17%
COVID19 and deploying the technology	4	4.94%
Quality of data bundles	2	2.47%
Teaching Methodology Online	1	1.23%
Lack of attention to Procedures	1	1.23%
Operational Procedures	1	1.23%
Total	81	100.00%

Source: Field data, 2021

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With fourteen (14) main themes and 81 references, the most dominant view expressed by the participants (constituting 13.5%) is that Lack of Devices and Cost involved is the biggest challenge that students and Lecturers are facing in the process of integrating technology into academic programmes in the six selected public universities in Ghana. Following this assertion, a section of the participants (constituting 12.3%) also admit that the lack of Network and Connectivity and Technical Know-how towards Learning Management Systems (LMS) are the next most prevalent challenges, scoring 12.3% respectively. In buttressing the point a respondent stated that;

*“Having access to smart devices, because one challenge they have is for those who can't afford, not everyone has a smart phone or a laptop, which is almost the key device that you would need to access virtual classrooms. So for those who don't have, especially during the pandemic, it was an issue when we tried to end the semester and some students claim they don't have the means to connect to the system. For the Lecturers, Yes it's more of a technical competence would be the challenge. They're not as technically competent as the younger ones. So we have a steeper learning curve to get the best with what is going on.”* [Interviewee 17]

Similarly, another respondent asserts that,

*“And then the challenges that Lecturers faced were basically from top management, top management as in at times, you know, we would have to be given some resources and I made mention of some of these resources, then software's and all that purchasing of Zoom accounts. So if these are not made available, as quickly as possible, then it becomes a challenge. Because lecturers are not ready to spend their money. I wouldn't spend my money on a ZOOM account.”* [Interviewee 11]

Further to this discovery, it was important to investigate the Institutional Mechanisms and Support Systems that Policymakers and Implementers have put in place to mitigate the challenges. The next section explains the solutions.

### Institutional Mechanisms and Support Systems

As a follow-up to the above question, the study sought to elicit from the policy-makers and Implementers, the Institutional Mechanisms and Support Systems that have been put in place to mitigate the challenges faced by students and lecturers in the integration process. The responses of the participants in line with this query is summarized as follows:

**Table 3. Institutional Mechanisms and Support Systems that have been put in place. Source: Field data, 2022**

Themes	Code Frequency	Code %
Network and Connectivity	8	18.6%
Management and Admin. Support	7	16.3%
IT Support Staff	7	16.3%
Training Sessions	5	11.6%
Help Desks	4	9.3%
Policy Intervention	4	9.3%
Power Supply Efforts	3	7.0%
Laboratories	2	4.7%
Partnership for Corporate Support	2	4.7%
Peer Support	1	2.3%
Total	43	100%

The Institutional mechanisms that have been put in place to mitigate the challenges faced by students and lecturers in the integration process are coded into ten (10) main themes. The dominant view expressed by participants (constituting 18.6%) is the assertion that Network and Connectivity is predominantly the most wide-spread institutional mechanism that has been installed to mitigate the challenges across the universities. This is closely followed by Management and Administrative Support and IT Support Staff (constituting 16.3%) respectively. The Issue of Training Sessions (constituting 11.6%) have also been dealt with to a marginal extent. In defending this assertion, one of the respondents, for instance, stated that:

*“Yes. So on the side of technology for the internet as I said earlier, one thing that the institution did was that our URL was white-listed by the Telecom companies. They really have helped because people had issues with data to access our system too. And also we've also improved or increased the number of WiFi access points, largely uncompromised. Having access to Internet has improved. Let's say from 40 to 70% now. So that's about 70% of WiFi hotspots have improved even in the students lecture halls and halls of residence.”* [Interviewee 6]

Similarly, another respondent passionately indicated that,

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*“We have been increasing the broadband, and we are trying to create hotspots in this university, you know, so that accessibility will be improved. If you're in the hall of residence, you can access the internet, even the office, you can access the internet. So these are some of the things that we are doing. The data centre is all part of what UGCS is doing.” [Interviewee 7].*

Having put the mechanisms in place, it was imperative to explore the attitude of the participants towards the challenges faced by students and lecturers, while discharging their duties. The next segment, therefore, presents the attitudes.

### Attitude towards the challenges of students and lecturers

In a quest to explore the attitude of Policy-makers and Implementers, the study sought to elicit their actions and responses towards the challenges that Students and Lecturers face while adopting and adapting to integration of technology. Responses emerging in line with this query is summarized as follows;

**Table 4. Attitude of Policy-makers and Implementers towards the challenges of Students and Lecturers. Source: Field data, 2022**

Theme	Code Frequency	Code %
User-Support Attitude	13	41.9%
Investigative Attitude	8	25.8%
Quick Response Attitude	8	25.8%
Patient and Calm Attitude	2	6.5%
Total	31	100%

The Attitude of Policy-makers and Implementers towards the challenges of students and lecturers are coded into four (4) main themes. The pre-dominant Attitude among Policy-makers and Implementers is User-Support Attitude, constituting 42.0%. This is closely followed by an Investigative Attitude (constituting 26.0%). Quick Response Attitude constituting 26.0% was also expressed by participants.

Addressing this assertion, two of the respondents, for instance, stated that;

*“So let me put it in the perspective of ICT directors. When COVID came, suddenly, the directorate was in the middle of any and every activity on campus, right, from meetings, to training, conferences, Viva, every department will contact us for a Viva or for anything, including the LMS. And it was more of a challenge to us to be able to deliver the goods. So there were a number of my staff who will be receiving student calls at 10pm or receiving WhatsApp messages from students to reset passwords. You know what I mean? So the way to challenges or students, as it were, complained about one thing or the other or wanting to help. But then a lot of our staff have to literally bend backwards to help.” [Interviewee 4].*

*“Um, personally, I have assisted my boss to do training for the Lecturers. And also provided user support for the students. Even as I'm sitting here, they call me for user support. So I have a positive attitude towards the challenges they face.” [Interviewee 2].*

### Organisational Culture towards Integration of Technology

In a quest to explore the Organisational Culture of the three key actors in the integration process, the study sought to elicit from the Policy-makers and Implementers perspective, the Socio-Cultural Issues that affect the integration of technology. The responses of the participants in line with this query is summarized as follows;

**Table 5. Organisational Culture of Policy-makers and Implementers towards Integration of Technology. Source: Field data, 2022**

Theme	Code Frequency	Code %
Atmosphere of Support for Integration	14	40.0%
Investing Funds (Brick vrs. Technology)	13	37.1%
Economic Factors & Competing needs	4	11.4%
Bureaucracy	3	8.6%
Resistance to Change	1	2.9%
Total	35	100%



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The pervading culture expressed by participants (constituting 40.0%) is the assertion that there is an Atmosphere of Support for Integration of Technology into academic programmes. This is closely followed by an equilibrium in the Investment of Funds into Brick and Mortar versus Technology (constituting 37.1%). Economic factors and competing needs (constitute 11.4%) while Bureaucracy turned out to be 8.6%. And finally, Resistance to change scored (2.9%). In bolstering this assertion, one of the respondents, for instance, stated that;

*“That is going to be huge. The culture, the behaviour, the norms and at least with us, I said that the technology itself started far beyond, before the pandemic. So we were teaching with the MOODLE before the pandemic. So you can see the culture here is about technology, you have to embrace technology and then I think the culture is much more welcoming, the institution welcomes technology.” [Interviewee 3].*

*“I think now there seems to be a balance. They realised that during the COVID period all our huge lecture theatres and huge auditoriums, huge hostels were virtually empty. So now they are pushing, as I said this year. For the past one year, I think the Vice Chancellors have put in about 20 to 30 million Ghana Cedis. For example, we are putting up a new Data Centre, just to cater for our needs. And the new data centre is going to cost us about almost 20 million Ghana cedis. I mean, as I said, is becoming positive; it used not to be so, but now they have realised that they have no choice.” [Interviewee 15]*

Similarly, another respondent also added that,

*“Yes on the side of management, it's been high because earlier on, you know, our internet bandwidth for example, was a bit low. Management have now increased by about 70%. Then also, access to internet on companies was also low. Now, through the Policies of management, Connectivity has been extended very well, extremely well. Even if you look at the side of WiFi access points to lecture halls and then to, halls of residency, that's all been done.” [Interviewee 6].*

An Atmosphere of Support for Integration of Technology in the public universities is the Culture of Policy-makers and Implementers but what is the culture of students and lecturers?

### Organisational Culture of Lecturers towards Integration of Technology

In a pursuit to explore the Organisational Culture of the Lecturers in the integration process, the study sought to elicit from the Policy-makers and Implementers perspective, the Socio-Cultural Issues among Lecturers that affect the integration of technology. The responses emerging from the interviewees in relation with this query is summarized as follows:

**Table 6. Organisational Culture of Lecturers towards Integration of Technology. Source: Field data, 2022**

Theme	Code Frequency	Code %
<b>Conservatism (<i>Resistance to change, Apathy</i>)</b>	<b>15</b>	<b>53.6%</b>
Generational Gap and Adoption of Technology ( <i>Older Generation as Laggards</i> )	7	25.0%
Debate on Online Assessment Methods	3	10.7%
Atmosphere of Support for Integration	2	7.1%
Resistance to Technology that is difficult	1	3.6%
<b>Total</b>	<b>28</b>	<b>100%</b>

The pervading culture among the Lecturers (constituting 53.6%) is the affirmation that there is still Conservatism in the form of Resistance to Change and Apathy towards integration of technology into academic programmes. This is closely followed by a Generational Gap in Adoption to Technology (constituting 25.0%) where the older Lecturers are laggards. In confirming this assertion, two participants stated that;

*“Yeah, so lecturers are conservative, and sometimes it shows in the use of the tools, when they are going online, they run a few that they must speak to the content, otherwise, the students cannot understand whatever they want to teach; the view that if I give a video for them to watch, I still have to be there to explain to them my way and otherwise the student can go on the field in a traditional way. Yes, yes. I believe that, that is probably been one of the key things when it came to lecturers.” [Interviewee 4].*

*“You know, some of them don't care because they think technology will not add anything to their lives. They've been teaching face-to-face for a long time. So whether there is technology or not, they still do their teaching and go away.” [Interviewee 7].*

Similarly, another respondent also added that,

*“So the attitude with regards to that group of people is there, it's very difficult. They have the attitude of resisting technology. Yes, I've experienced it. I have experienced it, where I pushed for something. And some of these professors will tell me it won't work.” [Interviewee 11].*

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It is therefore, revealing that Conservatism (insighted by resistance to change and apathy) are still dictating the culture of academic staff in the various faculties. So it is quite disturbing to discover that culture of Lecturers is still Conservatism in the form of Resistance to Change and Apathy towards integration of technology; acknowledging the fact that there is still a Generational Gap in Adoption of Technology because the younger lecturers are early adopters, while older Lecturers are late adopters or laggards. And the reason why they tend to resist change is because of technology that is difficult to adopt. However, is the culture of the students the same or different? The next segment presents the culture of the students.

### Organisational Culture of Students towards Integration of Technology

In a quest to explore the Organisational Culture of the Students in the integration process, the study sought to elicit from the Policy-makers and Implementers perspective, the Socio-Cultural Issues among Students that affect the integration of technology. The responses emerging from the views of the respondents in line with this query is summarized as follows;

**Table 7. Organisational Culture of Students towards Integration of Technology. Source: Field Data, 2022**

Theme	Code Frequency	Code %
Social Media Adoption (Whatsapp/Search Engines)	5	38.5%
Atmosphere of Support for Integration	4	30.8%
Culture of Collaboration (Peer Support for Technology use)	2	15.4%
Resistance to Technology that is difficult	2	15.4%
Total	13	100%

The pervading culture among the Students, constituting 38.5%, is the declaration that Social Media Adoption (the use of Whatsapp and Search Engines) among students towards integration of technology, has been discovered as a new culture among students. This is closely followed by an Atmosphere of Support for Integration (constitute 30.8%). Culture of Collaboration and Peer Support, constituting 15.4% was also expressed by participants, while Resistance to Technology that is difficult scored (15.4%) scored the least. In bolstering this assertion, two of the respondents, for instance, stated that;

*"I think culturally, at the moment, culture is not negatively impacting on students who are mainly the youth. I think it's kind of neutral. But then socially, it's rather impacting them highly. You know, social media is kind of the way to go now. And if I ever had one extra commenting that if you want to engage the students better then be on social media. So even though interestingly, you have discussion boards on a learning management system, some lecturers claim that having class groups on WhatsApp, solicits better responses from students, rather than on the learning management system."* [Interviewee 5].

Similarly, another respondent also added that,

*"And then also search engines have become a culture among students. You ask a student a question in class he has a phone and he's searching for the answer for you. So that has led to a lot students using technology as they like using techniques like delegating or relegating their responsibilities to technology to access for them. What happens is the Students prefer that Google has the best answer to the question. He doesn't think that what he knows himself or what he has experienced is more important. So he prefers to delegate or relegate his thinking to technology to answer, okay, and to save instead of particularly to answer."* [Interviewee 1].

This culture of Social Media Adoption, was further emphasized by participants as a paradigm shift in the culture of students since more and more students are inclining towards the use of Whatsapp group pages and Facebook for information relay, interactivity and feedback, as opposed to the use of Forum discussion panels in the Learning Management Systems (LMS) and the traditional modes of communication.

## V. DISCUSSION

Improvement in Network and Connectivity certainly calls for huge financial investments in technological infrastructure, as indicated by Policy-makers as *'Investing Funds (Brick verses Technology)'* which is the second highest theme emerging from the Organisational Culture analyses. According to the participants, there has been immense financial support from the Management team of the various Universities with paradigm shift to invest more in Technological Infrastructure than Brick and Mortar.

This assertion that majority of the Policy-makers and Implementers allude to, may be the catalyst for a paradigm shift in the Organisational Culture of the Universities. Because generally, majority of the participants admitted that the Organisational Culture that currently pertains among Policy-makers and Implementers is an Atmosphere of Support for Integration of Technology into academic programmes in the Universities. This may also be due to the onslaught of COVID19 Pandemic and the necessary financial investments that all public universities had to make to boost technology Infrastructure and logistics that should

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propel, rather than halt academic work. An atmosphere of support for integration, is confirmed by the studies of Maduakolam and Bell (2003) and Maney (2003) that in order for faculty members to incorporate technology across the curriculum, there is a necessity for institutional support that provides faculty members with release time, development funds, or other incentives (1999). Bell and Hofer (2003), also emphasized that there must be a support system in place to assist professors in troubleshooting and resolving technology-related issues without delaying or interfering with lessons.

Unfortunately, the Organisational Culture among the Lecturers is not an Atmosphere of Support for Integration of Technology, but rather a long-standing Culture of Conservatism induced by Resistance to change and Apathy. This is confirmed by the study of Mäkelä, et al (2019) in Finland, that all of the teachers had negative experiences and perceptions about the university's obligatory online platforms. There is still resistance to the full adoption and adaption of ICT tools and applications for successful teaching and learning since many instructors at higher public educational institutions in Ghana and elsewhere are so firmly rooted in the conventional pedagogical subject knowledge and delivery. The root of this seeming opposition lies in archaic mind-sets and academic traditions that are challenging to give up or abandon in favour of modern ICT innovations.

In their study, Francisco and Maria (2020) assert that more emphasis should be placed on pedagogical digital competence when training teachers so that education professionals can take full advantage of technological advancements to create, innovate, and incorporate the best teaching-learning processes that are enriching for students. This is further compounded by the fact that there is also a Culture of Generational Gap and lack of adoption to Technology where many of the older generation of Lecturers have been found to be late adopters or laggards, who either reject the technology or adopt slowly.

Adaptation is feasible. But at Ghana's public institutions, resistance to change is pervasive and persistent among both instructors, in spite of the COVID Pandemic. Numerous studies carried out in Ghana's public institutions (Afari Kuma and Tanye, 2009; Obiri-Yeboah et al. 2013; Bonsu et al. 2013; Badu-Nyarko and Amponsah, 2016) make it quite evident that opposition to change is a barrier to the successful integration of technology into the mainstream education system. The necessity for change in the way professional development for technology integration is carried out was stressed by Kincaid and Feldner (2002). Numerous researches have also discovered that a significant barrier to the use of technology in education is the absence of high-quality teacher development. The Younger generation of Lecturers, on the other hand, tend to quickly accept, adapt and optimise the use of the technology.

The Organisational Culture of the Students took quite a different twist, which could also be regarded as a paradigm shift from what used to pertain. In this study, policy-makers and implementers acknowledge that students currently have a social media adoption culture in which they use, among other platforms, Search engines, Facebook, WhatsApp (group chats) to research and transmit information and become more interactive with their lecturers and peers. According to the analysis, this Culture is closely followed by a Supportive Atmosphere for Integration, which explains why students have actually accepted the incorporation of technology into academic programs. The reason is that students utilize these social media tools more frequently than the LMS's built-in default tools because they have all been integrated into learning management systems. For instance, the Big Blue Button integrated into the KNUST's LMS is not utilized as frequently as WhatsApp, Facebook, and search engines. The prevalence of search engine use among students has also increased significantly, as more and more students, prefer to use search engines like Google Search to find quick solutions rather than spending the time to look for more opposing viewpoints on the subject, which would require them to use Critical Thinking Skills (CTS), as stated by Interviewee 1. A scenario that respondents say is very disturbing. However, Knezek et al. (2012) stated that ICT tools such as those designed for Social Media, support a variety of distributed learning, sharing, and knowledge construction activity options (Knezek, Lai, Khaddage & Baker, 2011) are creating new avenues for formal and informal learning interaction.

Prior to this paradigm shift, students typically preferred using conventional routes for research, information gathering and dissemination. These conventional outlets include campus libraries, radio stations, notice boards, banners, and posters, among others. However, the integration of technology has significantly changed how students now communicate, seek out information, and relay it in a highly competitive dynamic environment. This paradigm shift is confirmed by the study outcomes of Knezek et al. (2012) which discovered that there is a strong correlation between Social Media Learning (SML) scales for Learning Communications and Interactive learning, with a preference for sharing information than for seeking information. Students across all academic levels appear to have good attitudes toward the uses and applications of social media in academia. However, despite maintaining open-mindedness about the use of SM in courses, instructors appear to be a little more cautious than students (Piotrowski, 2015).

The Attitude of Policy-makers/Implementers towards the challenges of Students and Lecturers in the Integration of Technology is the final segment in the discussion, and it is worth noting that the general attitude of Policy-makers and IT Support staff is an attitude of User-Support; indicative of the fact that those who are at the fore front of the integration process are proficient in delivering support and solutions to the challenges that students and lecturers experience. This is also emphasized by the Investigative and Quick-response Attitude; where Policy-makers and Implementers conduct an initial investigation to ascertain the authenticity of whatever difficulty has emerged, before some response is provided. By extension, this may have been caused

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by the onslaught of COVID19 Pandemic (as indicated by Interviewee (2, 4, 6 and 11) and the need for IT Support Staff to rise up to the tasks to ensure prompt response that should facilitate, rather than halt academic work. Implications are that, User-Support and Investigative attitude of the IT Support staff will go a long way to mitigate pertinent challenges that confront students and lecturers.

### VI. CONCLUSION AND RECOMMENDATIONS

In conclusion, this article affirms that there are a myriad of challenges affecting students and Lecturers in the Integration process, but the most prevalent challenge is the Lack of Technological Devices and the Cost involved in acquiring devices for online and mobile learning. Policy-makers admit that they have not been able to mitigate this particular challenge. However, they have been able to put in place some Institutional Mechanisms and Support Systems that should cushion Students and lecturers. Notable among them is Network and Connectivity that has been improved for access to internet services anywhere, anytime and everywhere - lecture halls, Halls of Residence and off-campus locations.

The authors advance some recommendations and significant contributions. This research has filled the contextual gap in literature by eliciting the perceptions of Policy-makers and Implementers about the relationship between the organisational culture and the challenges that stakeholders experience in the process of integrating technology into Ghanaian public universities. We recommend that;

Policy-makers must consider revising policy guidelines to include the modalities for improving the user-support systems such as online and physical Help-desks and user-support interfaces, where students and lecturers can receive prompt and quick response and support, not only in a knee-jerk response to the outbreak of a pandemic. The steps to investigating user-interface challenges, must also be shortened to ensure quick and smooth interventions.

In order to practically mitigate the challenges associated with Network and Connectivity, the management of the Universities agreed to a Public-Private Partnership (PPP) deals that got the Telecom Companies 'whitelist' the URLs of some of the Universities unto their platforms, among others, to ensure a seamless access to internet at a cheaper or no cost. Policy-makers and management of the Universities under study, must likewise, take the necessary steps to partner with private businesses and corporate Ghana, to supply learning devices such as laptops and tablets for students to be able to access at a lower or no cost to the end-users. Management of the public universities could also consider a moderate terminal levy that students can pay to get access to such mobile devices to facilitate teaching and learning. Some universities have provided devices for lecturers; however, the majority have not. As a working tool, Policy-makers must as a matter of urgency, provide the necessary devices and training for lecturers. This may have a short-to-medium term effect towards rectifying the culture of conservatism and resistance to integration and the digital-divide, characterized by the generational gap where the older generation will become more tech savvy as the younger generation.

The authors of this article, recommend that the pervading culture or atmosphere of support for integration of technology into curriculum delivery must be improved by the introduction and implementation of a strategic and comprehensive integration plan that will ensure expansion of the current Network operating Centers (NOCs) and the general Network architecture to facilitate stable internet connection. Policy-makers must take advantage of the pervading culture of support and invest more in technology and inclusive integration that will improve training of all the key actors, install additional learning technologies, build human resource capacity and integrate more online learning tools for students and lecturers to seamlessly perform their mandate. As part of the limitations of this study, we would recommend that future studies should adopt a quantitative research method to expand the scope to cover the remaining 9 out of the current 15 public universities in Ghana for a more generalized outlook and outcome.

We conclude with the caveat that Policy-makers and Implementers must continue assiduously in their mandate to integrate technology into academic programmes and channel more funds into technology integration to tip the balance in favour of technology infusion – surging towards total transformation level as prescribed by the FCIT's Technology Integration Matrix (TIM) domains. Because numerous studies have proven that technology integration is the education of the future, not overlooking the fact that another pandemic may struck. Public Universities in Ghana must prepare for the future

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