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## DISRUPTIVE TECHNOLOGY OF BANKING AND FINANCE MARKET: PEDAGOGICAL GUIDE TO LABOUR DESIGN

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## ABSTRACT

The paper critically examines the elementary drivers of a technologically driven financial market, with a special focus on fragile financial systems. In furtherance, examines the expected impact of emerging disruptive technology of the fourth industrial revolution and, for that reason, proceeds to make a subjective proposition of policy framework and pedagogical guidelines required in its successful management under the economy of a sovereign nation. The phenomenon under study results in a theoretical proposition of a labour competence and performance assessment index model by the author to guide the evaluation of the ‘Human Capital Function index’ of any technologically driven economic market.

***Keywords*:** Disruptive Technology, Banking and Finance, Labour Capacity, Policy, Pedagogy

***JEL Classification*:** O17, O25, O31, O32, O33, O35, O3

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## BACKGROUND OF STUDY

The term ‘Disruptive Technology’ according to Christensen (1997), is a phenomenon in which an innovation transforms an existing market or sector through simplicity, convenience, accessibility, and affordability, in a circumstance where complication and high cost are the status quo. The paper thereby submits three major reasons that result in the promotion of disruptive technology in any given economic market, and these are;

* 1. When the business model of the disruptive technology is introduced to enable low-end customers, or new segments of customers to patronize.
  2. When the quality demand of the disruptive technology and value within a network presents prosperity to the network of suppliers, customers, and distributors.
  3. When disruptive technology has the ability to grant affordable and accessible products to a wider audience.

As Vassallo (2020) argues, disruptive technology is undeniably the top-list driver of the unprecedented changes in business performance today. The modern financial market has a new emerging operating model of “Automation”, which is a unification of multiple technologies, including advanced analytics, cloud applications, Block Chains, Machine learning and others, and are the leading drivers of financial institutions in shifting from traditional processing to strategic partnering. Consequently, championing financial institutions to the future by desisting from providing reactive answers to unforeseen problems, but rather holding the ability to deliver predictive insights to drive economic growth. Currently, the leading driving forces of disruptive technologies in the financial market are as follows;

* Blockchain and Distributive Ledgers in the Banking System
* Machine learning and Financial Market
* Banking and Finance Process Automation
* Cloud Technology and Financial System

## Block Chain and Distributed Ledgers in Banking System:

This type of disruptive technology promotes a growing list of records called blocks, which are linked together using cryptography, timestamps and transaction data. This makes it resistant to modification of their data, once recoded. And typically managed by a peer-to- peer network as a publicly distributed ledger, which is considered secured by design. The effort of this evolved technology is to replace the traditional ledger account format, with a digital ledger, which consists of varied transactional records of blocks across many computers, so that any involved block cannot be altered retroactively without the alteration of all subsequent blocks. Thereby, allowing participants to verify and audit transactions in a dependent order, which is relatively inexpensive. This type of technology has become an answer to solving a long-standing problem of double spending as argued by (Catalini and Gans, 2016: Armstrong, 2016).

## Machine Learning and Financial Market

This type of disruptive technology deals with the application of computer algorithms that improve automatically based on experience in the use of data. It builds a model based on sample data, in other to make predictions or decisions without explicitly being programmed to do so, as submitted by (John, R. et al,1996). In its application across business problems, machine learning is also referred to as predictive analytics. The use of Machine learning helps to detect anomalous items such as bank fraud. Rule-based Machine learning helps to discover irregularities between products in large-scale transactional data for decision-making. For example, the use of records with ‘Point-of-Sale’ systems in supermarkets to guide accurate decision-making.

## Banking and Finance Process Automation

Alkhaldi (2021) argue, that human error in the financial sector results in an average of 25,000 hours of avoidable work per firm, and costs $878,000 per year. Therefore, the emergence of the robotic application is to augment human efforts by automating repetitive manual processes, and allowing the employees to focus on more critical tasks as a means in gaining a competitive advantage by a firm. On this very basis, the adoption and implementation of intelligent automation, relying on artificial intelligence technology, enables the robotic process and automation to handle complex processes by understanding human language, recognizing emotions and adapting to real-time data. This helps firms to scale up operations seamlessly when needed, saves time, cuts down expenses, minimizes IT department interference in main business operations, increases human employee efficiency, and reduces human error. Robotic Process Automation is currently useful in the areas of transactional report generation, Accounts payable, Mortgage processing, Customer Management, and Fraud detection in Banking and Financial systems, etc.

## Cloud Technology and Financial System

Cloud Technology defined by Partha Pratim (2018), is the on-demand availability of computer system resources and computing power, without direct active management by the user. The technology relies on the sharing of resources to achieve coherence and economies of scale. The use of certain features of Cloud technology, like cloud software services, Mobile back-end services, and Server-less Computing, helps to facilitate quick online financial services with minimized infrastructure cost. The downside is that a firm may have limited customization options when relying on public clouds to deliver cheap services under economies of scale.

## The Relevance of the Study

This very study is essential to the reason that the advancement of any economy by disruptive technology could be successful and sustainable under the condition of a quality skilled labour force, serving as a fulcrum in discharging such services. In all scenarios for consideration, human resources development for the labour market could never emerge in a vacuum unless guided by quality pedagogical instruction from the Center of Higher Learning. Thus, the essence and foundation of this study is to theoretically outlay policy architecture, and pedagogical framework to address the demand of the labour design, for the disruptive technological transformation in any given financial market, with a focus on fragile economic settings.

## LITERATURE REVIEW

Bruckner, et al. (2017) put forward that, with their findings, the estimates of the share of jobs at risk of being automated under disruptive technology vary widely and can reach staggering numbers of over (80) %. And further argued that Artificial Intelligence (AI) and other new technologies will continue to benefit higher-skilled workers, with a high degree of flexibility, creativity and big problem-solving, as well as interpersonal skills. The study further observed that low and medium-skilled workers, both in manual and cognitive jobs, are expected to face further pressures from capable machine learning and AI software. It must be emphasized, that in any economic market, the technology replaces certain tasks rather than complete occupations and sometimes creates new jobs that demand a new set of skills from workers.

*§ The use of the terminology ‘fragility’ or ‘fragile economy’ is employed as a definition concept from an economics perspective as proposed in the work of (Senzu, 2022).*

Brucker and his team advanced that both job destruction and job creation are determined not only by technological feasibility but also by economic, legal, regulatory or socio-political factors (Brucker et al., 2017).

What needs to equally be acknowledged is, that technological challenges also contribute to a shift away from traditional work arrangements to ‘contingent work’. Which basically, increases work flexibility, and gainful employment opportunities. And results in non- standard work arrangements, which causes workers to bear with new forms of employment and income risks. The author hereby puts forward that, what is described as the fourth industrial revolution, is a quantification of different ‘technologies’ and ‘capabilities’, which becomes a transformative channel for almost any industry, and every country. Thereby, postulates that such technological innovation, especially within the financial market enhances the productivity of workers, and creates new forms of products and markets, which is in accordance with the theoretical submission of Shiozawa (2020), as he argued that technological change of an economic market in a form of dynamic efficiency offers a better production technique for increase outcome. As a result, generates new jobs with entirely new professions to emerge in the long run. This kind of expected shift does benefit high-skilled workers, with a high degree of flexibility, creativity, and strong problem-solving and interpersonal skills.

The author posits that the influence of technology on economies is not pre-ordained and could be shaped by policies at the local, national and even the global level. Hence, the role of government policies and institutions is eminently crucial. (Geeds, 2005) predicate that technology, institutions and society tend to evolve together. And argued, that technology becomes transformative when it evolves into General Purpose Technologies (GPTs), which enable productive gains across many sectors of the economy. (Bresnahan and Trajtenberg,

1995) pose, past waves of industrialization have been associated with pervasive GPTs, which

resulted in growing returns-to-scale. Thereby, a breakthrough in many areas of technology is spurred by the growing ability of Artificial Intelligence to autonomously solve complex problems, as submitted (Davis, 2017). The current possibility has emerged due to increasing computational power at decreasing costs, rapidly growing datasets via its development mechanism, and advances in deep machine learning algorithms. Evidence of the past revolution indicates that the combination of the new technologies and the conditions that allow their widespread use, play a cardinal role in the transformation of labour market, and social structures (UN DESA, 2016).

The World Economic Forum has characterized Artificial Intelligence (AI) as the cornerstone of the Fourth Industrial Revolution. (Schwab, 2016) asserts that the growing ability of software-based systems to mimic aspects of human intelligence is a historic development in the automation process. So, whereas the first industrial revolution; the steam engine was an ‘applied to tasks’, which required muscle power, the ‘AI’ of the fourth industrial revolution has been an ‘applied to tasks’, which requires the brain power. In the complementary argument from the works of Bruckner et al, (2017), they established that ‘AI’ has been used commercially since the mid-1990s to assist in a variety of decision-making tasks, such as fraud detection. However, progress in ‘AI’ (2010), is driven by the confluence of the following factors;

* Growing availability of large datasets from commerce, social media, science and other sources
* The development of better Machine learning, algorithms and techniques
* The Increase in computational power

(Aron, 2015) present that ‘AI’ algorithms have outscored humans in identifying objects and faces in two popular tests, by acknowledging the fact that, technology plays a major role in

the replacement of human labour for certain tasks. Secondly, in an extreme scenario, widespread automation enabled by advanced technologies could cause unemployment and social upheaval. However, the net effect on the labour market conditions does vary depending on the type of technology, the speed of its diffusion, country-specific- conditions, policies and the nature of institutions. (Mokyr et al, 2015) submit historical evidence of the 18th Century industrial revolution, and establish that the greater use of computers and robots, enabled by technological progress, facilitated the creation of new products and services. And as a result, uplifted productivity and GDP growth, and created new occupations on a large scale. However, empirical evidence suggests that the actual impact of technological change in jobs does depend on the economic response to changes in labour and capital costs, as well as industrial characteristics, trade policies and Institutional conditions.

Reports across countries and regions of the world as at (2021) suggest that the service sector in general, exhibited the most dynamism, encompassing a diverse range of jobs. While highly skilled-intensive services jobs such as ICT, computer systems design, finance and other business services did have an increasing trend, however, their share in the overall employment remained low, particularly in developing countries. The paper thus argues the greater use of computers in the digital revolution has further shifted job requirements towards more cognitive attributes, de-emphasizing physical skills. As observed, it is very difficult to separate the effects of technology from those of other structural shifts, such as changes in Institutional systems and social norms, the globalization of production, markets, labour, education and tax policies. While evidence indicates, technological progress has contributed to job destruction over the two centuries, other alternative empirical evidence attests that new technologies have helped to create new jobs, many of which are in new sectors and industries. Which, evolves around skill-sets demanded by the labour market.

Bessen (2016) adduce that, new technologies substitute workers only in specific tasks, but do not necessarily eliminate entire occupations. He further argued, only (270) occupations listed in the 1950’s USA census have been eliminated on (2010) data-report, due to automation. In furtherance to that argument (Acemoglu and Autor, 2011: Cortes, Jaimovich and Siu, 2016) empirically classified tasks under technological changes along two dimensions as ‘manual’ versus ‘cognitive’, then ‘routine’ versus ‘non-routine’. Thereby (Autor, Levy and Murnane, 2003) described ‘routine tasks’ as tasks that are based on well-understood procedures, and can be described by clear rules and algorithms. But ‘Non-routine tasks’ by contrast, require flexibility, creativity, complex problem-solving involving human interaction. Technological advancements in the past decades, which were in the area of computer processing speed have primarily led to the automation of routine tasks. And has led to a decline in occupations that mainly involve routine activities both manual and cognitive.

Stewart et al. (2015) posit that in recent decades, there has been an increase in demand for workers that perform ‘non-routine’ and ‘cognitive tasks’ particularly in knowledge-intensive industries, with a special emphasis on management consulting, business analysts and information technology managers. The above kinds of jobs have been among the fastest- growing occupations in England and Wales in the early 1990’s.

Since the 1980’s employment has shifted away from middle-wage jobs, towards both high- wage jobs and low-wage jobs. This “hallowing out” of the middle wage distribution was extensively documented in the United States by (Autor, Katz and Kearney, 2006: Acemoglu and Autor, 2011). The same report was documented for the European countries by (Goos, Manning and Salomons, 2014).

In developing countries, the concern is shifted to the impact of technological progress on the informal sector, which dominates in terms of employment in such economies, particularly in

the rural areas, household- enterprises, small-scale producers and service providers, where informal employment is most prevalent. This concern of the new waves of technological change has been raised in relation to the impact of automation in production, which may lead to the displacement of workers in formal occupations, thus, increasing the incidence of informality and precarious work arrangements. In a succinct response to such concerns and anxiety (Garcia-Murillo and Valez-Ospina, 2017) submit that information and communication technologies can make an important contribution to expanding the scale of production among household enterprises, and small-scale firms, leading to the creation of new businesses. La Porta and Shleifer (2014) advanced the argument on the extensive use of ICT, and how it can contribute to the expansion of the formal sector, and the consequent decline of the informal sector in both relative and absolute terms. In addition, (Senzu, 2021) put forward the techniques required in the adoption and adaptation of certain technology for fragile economic settings, as a means to promote financial inclusion, to indirectly shrink out the informal sector enterprise-financial transactions, thereby creating a channel of informal household businesses into an indirect formalized enterprise operation whose transactional records are visible to government data ascertaining, and analysis.

## METHODOLOGY FOR THEORETICAL DESIGN

This section of the paper discusses the methods, which set out the framework in the theoretical design of the concept behind the policy framing, including the pedagogical guide for a fragile financial market, as well as required labour competence, and assessment metrics for a technological changing financial ecosystem of a fragile economy. Steiner (1988) put forward that a theory should meet certain standards of knowledge. And knowledge, however, is recorded as ‘knowing’ as the body of expressed true beliefs. Therefore, theory can be fact

as well as true. (Sekeran, 1984) posits, that the hallmarks of highly esteemed social science research are the development of, and the reliance upon, sound theory, which is necessary to ensure rigour and believability. Theory building as a formal scientific process is relatively rare even in the more mature social science study. (Bourgeois, 1979) argues, that the formal notion of grounded theory building in the social science field is a little over four decades old per the landmark work published by Glaser and Strauss (1967). Thus (Abend, 2008: Swanson, 2013) poses that theories are formulated to explain, predict and understand phenomena, and in many cases challenge and extend existing knowledge within the limits of critical bounding assumptions. Therefore, a theoretical framework is a structure that can hold or support and explain why a research problem under study exists. Jacard and Jacob (2010) assert that theory should be seen as a conceptual basis for understanding, analyzing, and designing ways to investigate relationships within social systems. Alan and Randy's (2005) argument on methodology as an underpinning of this theoretical design, deduces, it should meet the two criteria;

* Most appropriate to achieve an objective of research mounted as empirical evidence.
* It should be possible to replicate in a given circumstance.

(Brown, 2006) complimentary pose that methodology is a philosophical framework, upon which the research is conducted, or the foundation upon which the research is based. Hence, the paper draws its fundamental theoretical construct from inductive reasoning, as an observation of the phenomenon underplay. With the interpretation of such natural phenomenon adhering to the principles that govern hermeneutical traditions as argued by (Denzin and Lincoln, 2005) holding to the fact that the interpretivism approach should be rooted in dialectical and hermeneutics, which is based on the belief that knowledge claims by individuals about social reality are socially and mentally constructed. However, the author’s

effort in the design of a mathematical model as an aspect of the theory constructs sought to

attain a ‘surrogate’ framework serving as a methodical explanatory concept of the phenomenon; relying on the definition of ‘surrogate’ by Maki (2018), which he argued that such a designed abstract model should be a simplification structure with an attempt to match some complex reality, and can be judged by the degree of resemblance it achieves to the real world.

## THEORY OF POLICY FRAMEWORK AND PEDAGOGICAL GUIDE FOR FRAGILE FINANCIAL MARKET

Under this sub-topic, the author proposes two theoretical concepts for disruptive technology, emerging within a developing financial market, which are;

* 1. Disruptive Technology and Policy Framework for the Fragile Financial Market.
  2. Disruptive Technology and Pedagogical framework for the Fragile financial market.

## [i.] Disruptive Technology and Policy Framework for Fragile Financial Market

Although technology is adduced as a major force of disruption, careful management is an engine of productivity growth, however, its impact on the labour market, and to some extent income distribution, ultimately depends on the conditions of Institutions and Policies that are in place at the national level, as well as the global arena. (Mazzucato, 2013) posits the government plays a crucial role in fostering innovation-led growth as a catalyst, not only as a facilitator. Government being a facilitator requires creating an environment to ensure technology development adaptation, as well as the diffusion of new technologies appropriate to their own country context. Therefore, to institute an effective policy framework and measures, as a catalyst, the following policy guidelines are required;

* + - The State should initiate policy support for National and Private Institutions of Research and Innovations.
    - The State should make provision of relevant infrastructures to direct the technological eruption.
    - The State should initiate policy support for business incubators that enable start-up firms to bring new technologies to the market.
    - The State should initiate policy support to facilitate networks of firms and non-state actors towards a unified productive system.
    - The State should institute a policy for effective subsidies or tax incentives for consumers as preferential regulatory measures to promote the adoption and diffusion of new technologies.
    - The State should adopt the skill of sector-specific policy design as technological upgrading, as well as policy targeting.
    - The State should promote a policy of antitrust and lack of competition among firms.
    - The State playing a crucial role in educational policy, should address the adaptation of education curricula that reflect the skills demand of the near future on a timely basis.
    - The State should engage in proactive policy initiatives to address the consequences of new technologies, in other to reduce vulnerabilities and expand the social welfare.

## Disruptive Technology and Pedagogical framework for fragile financial market

Educational systems and training centres must prepare workers to be flexible and, to develop new skills in response to rapid changes brought by new technologies. Which should be grounded in a policy to hire and retain quality educators, proper funding to educational institutions, and high standards of student achievement assessment, and measurement

mechanisms. Furthermore, adopting standard methods to distinguish students who have the capacity and skill for lifelong learning from others, to guide in instituting educational support policy targeting. Below are the outlined measures and frameworks for a National policy and pedagogical design;

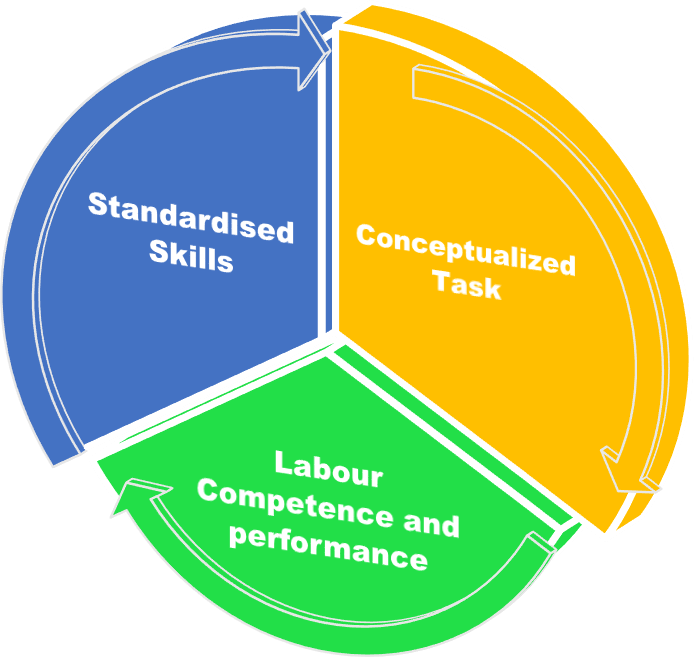
* + The State should be committed and proactive in the policy design of public expenditures on active labour market programmes in the form of training and job search.
  + The State should engage in educational incentives and policy initiatives to strengthen the rights of workers in a non-standard work arrangement through legal and tax reforms.
  + The State should initiate an educational system and policy mechanism that ensures that new emerging technology at the global level is proactively employed within the context of the local economy towards sustainable development, to thwart its potential disadvantages.

## THEORY OF TECHNOLOGICAL CHANGE AND LABOUR COMPETENCE & ASSESSMENT INDEX MODEL

This section of the paper examines what should constitute labour competence, and the mechanism of assessment as a model index to address realistic challenges that emerge out of labour market defects under a dynamic or evolving technological environment. The theory is to resolve the comprehensive assessment gap that the human development index [HDI] fails to address within a disruptive technological ecosystem. Leonard (1999) argued that the widely accepted concept of ‘labour competency’ defines the effective ability to perform fully identified labour activities successfully. Therefore, the theoretical essence of this section of the paper is to establish a model to define the elements that constitute competency of the

labour market for assessment within a technologically evolving environment. Below is the proposed structure of the model;

Fig. ‘E1’

*Labour Competency and Assessment Index Structure*

*E.T. Senzu, (2022) Labour Market, Industry and Economic System*

## DEFINITION OF MODEL INDICATORS AND METHODS OF COMPUTATION

* + **Conceptualized Task**: This model indicator examines the activities and requirements of workers, together with the skills, knowledge, aptitudes and responsibilities that are required of the workers to accomplish the task. For that purpose, well-conceptualized tasks towards a standardized skills requirement are rated as (1.0) and further termed by this paper as [high-job-responsibility] as a presumptive estimate, while a weaker task definition with poor industrial clarity and expectation of labour requirement is rated below as (0.5) defined by the paper as [low-job-responsibility], and presented herein as a proportional estimate. Therefore, an assessment of a Conceptualized task

is placed in a probability range of [0 to 1], with its structural model defined below as an equation (*Eq.1).*

Therefore, below is a prescribed scale structure of a task-driven mechanism within an evolving financial market underpinned by technology, which is classified by the paper as ‘Conceptualized task’ rating indicators;

* + - Standardized Task (ST) = (0.8-1.0)
    - Average Standardized Task (AST) = (0.5-0.7)
    - Unstandardized Task (UT) = (0 – 0.4)

## Conceptualized Task Index (𝝀)

**Ꞙ(**𝝀) = [(𝑼𝑻), (𝑨𝑺𝑻), (𝑺𝑻)] ***(Eq. 1)***

* + **Knowledge Development Index ‘Computation’ [β]**: This indicator examines workers with a higher degree of flexibility, creativity, big problem solving and interpersonal skills. This index factor depends on the qualification level of the candidates, as in the time period of schooling, as established in the Educational Index (EI) formula developed by UNESCO.

𝐸𝑌𝑆𝐼 𝑀𝑌𝑆𝐼

**Ꞙ(β)** =

( 18 )+(

2

15 )

**……….(*Eq.2)***

MYSI – Mean Years of School Index EYSI - Expected Year of School Index

*UNESCO Institute of Statistics (2010)*

In the computation of the (β) equation model, the paper thus proposes that the assumed ‘Mean Years of Schooling’ [MYSI] should be pegged at (25) years. While the minimum ‘Expected Years of Schooling’ [EYSI] should be pegged at (23) years within fragile

economic settings, however, in the real structure modelling, the statistician could express disparity based on actual factors at play within a chosen country of study, while defining the probable conditions for computation in context.

* + **Labour Competence and Performance [**𝝍**]**: There are two methods proposed by the author in conducting the ‘labour competence and performance’ assessment, as a composition of the theoretical model*. Method one* relies on the examination of the University performance ranking data, from which the candidate was a graduate, through the use of the ‘QS’ world ranking statistics as a raw percentage score allocation for higher learning Universities. Such adopted *Method* for statistical computation is relevant, only when the candidate is fresh to the labour market, with no experience. *Method two*, in this case, relies on novel data obtained from the historic labour performance of the candidate from the institutions served in the past, which is pegged on a threshold of three (3) years as a minimum requirement.

Below are the detailed structural applications of the various computational methods for the proposed models of labour competence and performance assessment;

## [Method-one]

The assessment of the ‘Labour *Competence and performance*’ of a candidate with the ‘method one’ approach depends solely on the [**Quantitative Ranking**] with the College or University the Employee graduated from, under a global score, with the percentage converted to a probability score from (0-1.0). That means if a College scores 40% on the Global ranking, the graduated potential employee is credited with the 40% as (0.4) labour competence with the hypothetical assumption that the candidate is a direct product of that system and, thus, should reflect on the skillset as a performance prior entering into the job

market. It must be noted, that there are some Colleges, which are statistically unranked due to performance at the global level, and therefore, when the percentage rating in terms of ranking falls below 20%, such Colleges could be computed with an average hypothetical rate of (0.1) to significantly reflect the *Labour Competence and Performance Index* of the potential employee prior to entering the job market.

However, when the candidate has served the labour market for a minimum of three (3) years, the computation of the ‘*Competence and Performance’* of the candidate shifts from the College ranking data file input to the candidate's labour market performance data, historically attainable for analysis.

## [Method – two]

With ‘*Method Two’*, the four major variables to be relied upon in the assessment of labour ‘*Competence and Performance’* assessment are defined under a probability range as follows;

* Flexibility [FL] = (0-1.0)
* Creativity [CR] = (0 -1.0)
* Problem Solving [PS] = (0 -1.0)
* Interpersonal Skills [IS] = (0 – 1.0)

The dataset of the four (4) variables above should be easy to attain from a candidate's previous working establishment, as a micro-data bank for employees, though the standardization approach in collecting such data may be a challenge, and may vary from one Corporate Institution to another. This could be considered as the weakness of this proposed mathematical model, however, the author proposes that the above indicators as scalable functions could be adopted as a national policy for labour institutions to ascertain a reliable databank for ‘*National Labour Competence and Performance rating’* on working citizens, to

serve as a measure for national level productivity and efficiency analysis, within a technologically evolving environment.

Thus, the formula and the procedure for computing the *Labour Competence and Performance* using the second method approach are outlined below;

**Ꞙ(**𝝍) = [𝑭𝑳 + 𝑪𝑹 + 𝑷𝑺 + 𝑰𝑺)](𝟏**)** (***Eq.3)***

𝛀

𝜓 *Labour Competence and Performance* Assessment

FL *Flexibility performance of employees* in the Job market

CR *Creativity performance of employees* in the Job market

PS *Problem-Solving performance of Employees* at the Job market

IS *Interpersonal Skills of Employees* in the Job Market

Ω The minimum years served at the Job market by the employee during the

period of assessment.

After the establishment of equation (3), the final composition of the model is to aggregate sections of the Labour *Competence and Performance* assessment into a final composition termed by the author as the **Human Capital Function Index** within a technologically evolving system symbolized as (Φ) relying on the three aggregated indicators of assessment outlined below;

[𝜆] *Conceptualized Task Index* for Employees

[𝛽] *Knowledge Development Index* for Employee

[𝜓] *Labour Competence and Performance Index* for Employees

The ***Human Capital Function Index (***𝚽) *constituting* Equation *(4)* upholds a hypothetical assumption that in the entire lifetime of an employee, their *Capital Function Index* should aim towards a probability scale of (1.0) from (0), while the zero herein is considered hypothetical as an illiterate candidate with no working experience and skill capacity, thereby, becomes an ideal perfect fit for a newly born baby, with the hope to progress through the ladder of productive life struggle and experience in a given time period, thus, considered and estimated as Human Development Index (HDI). Hence, the proposed equation model of the Human Capital Function index (HCFI) is;

**Ꞙ(HCFI) =** 𝚽 = ( 𝟏

# 𝝀+𝖰+𝝍

) (Ω) (*Eq.4)*

Equation (4) is a proposed model and an assembled aggregate output of equations (1), (2) and

(3) representing an assessment of a Human Capital function Index of an emerging disruptive technological environment.

## CONCLUSION AND RECOMMENDATION

For a developing economy to productively operate successfully, and sustainably in economic performance amidst disruptive technology, requires that the government set out the infrastructure and operational mechanisms that could easily and proactively conceptualize any emerging technological waves at the global level to the national advantage. Such an effort requires a competent set-up of implementation institutions, quality policy designs, and quality high-learning institutions to guide the labour market to develop appropriate skill sets. Finally, there should be an effort for the government to prioritize its funding in Research and Innovation as a complimentary incubator for the labour market, beyond the mainstream academic process of students' development.

As disruptive technology emerges in an economy for greater benefit, it must be anticipated that it is associated with some level of disadvantages to the labour market, which the paper further recommends, that inquiry be made into the phenomenon of social protection and welfare distribution of non-standard workers of firms in developing economies, experiencing disruptive technological advancement.

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