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COMPARATIVE ADVANTAGE MAXIMIZING MODEL FOR HEDGE ETA AMID SMES

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ABSTRACT

Purpose- An index of eta shall realistically align and enhance on work order basis process in manufacturing, due to tough business in competition urging SMEs to smart comparative advantage. Once these improvements failed, could not heal existent chronic pandemic of efficiency or effectiveness either.

Methodology- The research contrasts both substantial endogenous and exogenous variables by the driver of scale ratio as well as a throughput yield index, reflects the timely outcome to identify and fuse both quantitative and qualitative together driven by OEE, which correspond with among performance index, availability index, and quality index, runs live attributive data of subcategory to understand OEE based on finance-outcome dimension and process-outcome dimension from original uploading points.

Findings- SMEs accounted over ninety percent in industry, using OEE as a metric to address future discounting in hazy rule. Therefore, fusing the latest information technology is vital in assisting current deviation on tractable, realistic, and applicable improvement, which finds out a way forward maximum comparative advantage that while plotting the flexibility associated by Edge Computing under Modules Driven Architecture.

Conclusion- Focus means about making it simple. A model provides particular eta to optimize scheduled work order validly. One case study is employed to explain and benefit both OEE and ROI.

Keywords: Comparative advantage, ROI, OEE, VUCA, VIVO**JEL Codes:** O47, D24, D81

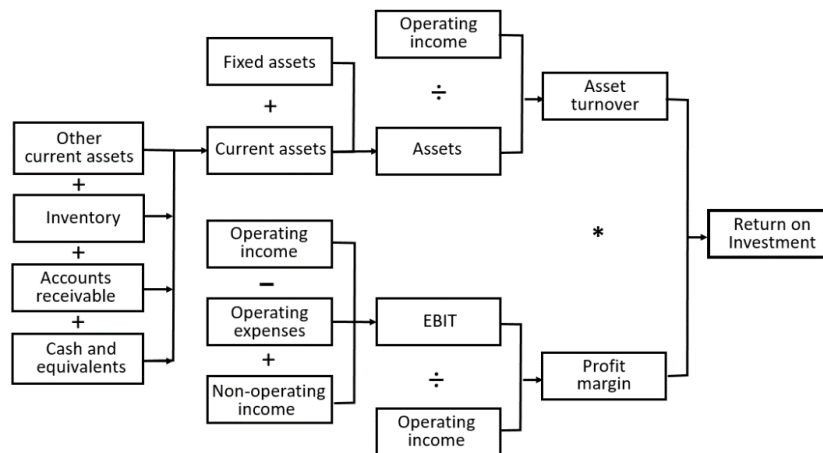
1. INTRODUCTION

The scale index transformative potential will only be fully captured by a new and different regulatory framework situated at the nexus of data and digital identity. The data quality is meant to ensure that all data is accurate, complete, consistent and as up-to-date as possible. The tremendous changes in manufacturing, and the recent pro-active stance of monitoring data transaction, may potentially combine to facilitate a transition from one regulatory model to another. According to Schumpeter (1934), “capitalist enterprise” and “technological progress” are “essentially one and the same thing”. And “the economic efficiency of an economic allocation or outcome in the presence of externalities” by Coase (1937). SMEs are always seeking for new business opportunities. By doing things differently than others, in order to enhance and secure their comparative advantage over competitors, the entrepreneur has to make the difference anew and explore new innovative business ideas, processes management, and marketing strategies, and so on.

Recently firms have begun to decry instant message for greatly increasing complexity, sometimes making even trivial feature difficult to build under VUCA acronym of volatile, uncertain, complex and ambiguous (Bennett & Lemoine, 2014). The creating resources balance needs SMEs to reach a point at which optimization no longer makes critical mass, such tasks require a flexible mechanism to be consistently identified and modeled to filter out the risk factor for dynamically allocation. Absolutely, emerging tools, applications and theories highlights the rising trends and studies in the user experience (UX), user interface (UI),

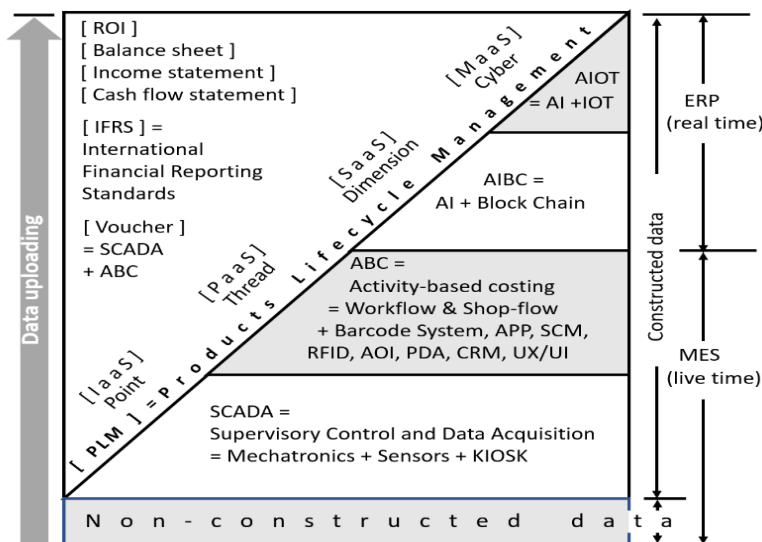
and graphic users interface (GUI) management field (Joo, 2017). Which is the process of finding the combination of decision variables corresponding to the best performance of a system, evaluated through the output of a suitable simulation model in practice (Meloni et al., 2020). It is like a financial supervisor trying to run a business with sufficient and necessary indexes of Return on Investment (ROI), meets the best way to remove any ambiguity is to measure the key financial outcomes as shown as Du Pont formula (Bragg, 2020) in figure 1. While using OEE to ensure its optimization of resources, and further tracking to achieve the maximum comparative advantage.

Figure 1: Du Pont Formula



The paperless smooth process needs a tractable tool in front of origins at data input, which approaches infinite data acquisition, relies on upon well down of data flow continually with Online Transaction Processing (OLTP), which stands for batch processing, and provides Statement of Work (SOW), in-time result, and Decision Support System (DSS) under reliability and security. SMEs have been using ERP workflow system, it belongs to finance-outcome dimension of structured data across various departments following subjective terms of SOP. On the other hand, MES shop-flow system belongs to process-outcome dimension driven by parameter, structured and unstructured data via Object-Oriented Techniques (OOT) with Online Analytical Processing (OLAP).

Figure 2: Data Uploading



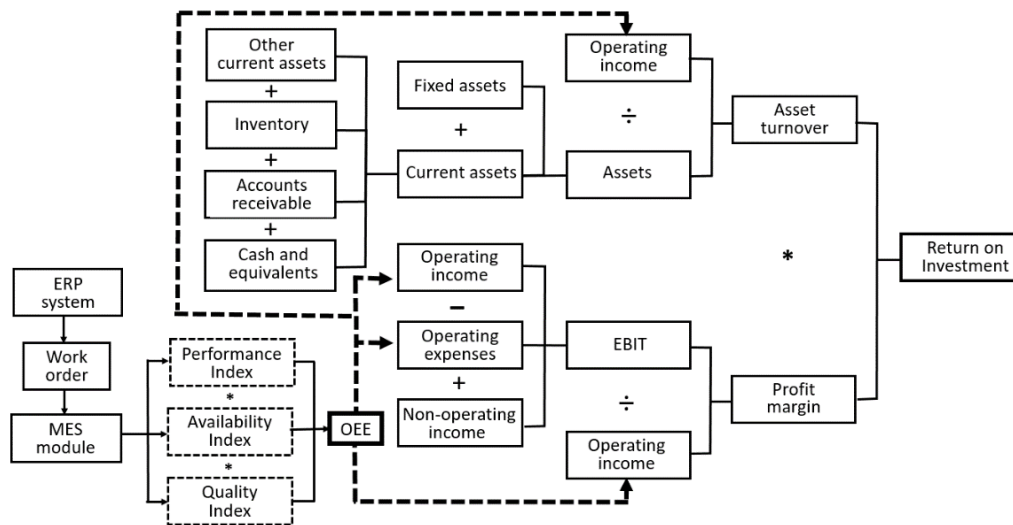
At the present time various services, products, and mobilizations as well as the latest tools and techniques are accessible and submission a lot of thoughts inside the custom-made modules (Sharma et al., 2018). Both concurrent data flow is seamless

collaboration as data uploading as in figure 2, being linked and fed by live input with SCADA system (Block and Lindeber, 1990), such as sensors, barcode tools and mobile devices, and so on.

In developing amid data entry and digital transformation to open up an "observable" or "collaboration" pipeline at the same time, so that the authorities can understand what the processes are alert, what the operators are doing, and prevent majority of IT projects partially and completely fail (Standish, 2019). The Figure 2 shown as the right side is for manufacturing processes beginning at initial bottom line stepping up from Non-constructed data, SCADA, constructed data, ABC, AIBC, and until AIOT. The middle way of Figure 2 is a slop for Products Lifecycle Management (PLM) beginning at left moving along to right top thru Point of IaaS, Thread of PaaS, Dimension of SaaS, and Cyber of XaaS, then archiving Mobility as a Service (MaaS). The left side of Figure 2 is finance procedure of IFRS going up thru Voucher, IFRS, Cash Flow Statement, Income Statement, Balance Sheet, and arriving ROI. Definitely, entire working elements and functions are conducted by Data Uploading under timely live OEE of MES module and liquidated ROI of ERP system.

There were lots of entry tools to improve data input and data uploading procedure onto narrowing digital divide, such as handy systems of barcode, QR code, AOI, RFID, Sensors, PDA, mobile APP, Device API, and so on. These entry tools and techniques are mature for application among machines, operators, processes, and API software. Definitely, wrong decision making derives from flawed data under GIGO (Vogt, 2005), because digits never lie. Saw another way, the output index of ROI usually cannot be any better than the quality of inputs except better outcome of OEE under collaboration amid ERP system and MES module as shown as Figure 3. There is a significant benefit to manufacturers while working and aligning to justify the scale ratio of proper Operating income and Operating expense under process capability index (Cpk).

Figure 3: Collaboration under ERP system and MES module



2. LITERATURE REVIEW

The empirical experiment model approach to the design of complex engineering and managing systems can be applied to social systems. The digital computer has become a practical, economical tool for the vast amount of computation required. These accomplishments now make it possible to cope with the greater complications that we find in the dynamics of industrial and economic behavior (Forrester, 1961). Data surveillance is now supplanting conventional surveillance techniques. With this trend come new monitoring and collecting online data such as mass dataveillance, it is going across various platforms (Clarke, 1988). Three types of system are identified and differentiated: mechanical, organismic, and social systems. The evolution of our concept of an enterprise from mechanical to social is then traced, including the consequences of (1) considering the parts of an enterprise separately, as is commonly done, that is, managing analytically versus synthetically; (2) supervising personnel who can do their jobs better than their bosses; (3) treating problems separately rather than systemically, and (4) taking disciplines as aspects of reality, that is, as categories of nature (Ackoff, 1994). The normal manufacturing system works itself. Over the whole range of production activity, supply is adjusted to demand by Production Control that is automatic, elastic and responsive under information technology. Lots of entries and applications are currently looking for both structure and accuracy of the data being

fed into process to make assured outputs. Since the mid-1990s businesses approach ERP systems influential in improving productivity and profitability (Velcu, 2008). The specialization of consultants makes them more attractive to the implementation and user’s relationship becomes crucial in the success of the ERP implementation (Khosrowpour, 2000). However, ERP systems are complex and costly, which makes the implementation process challenging. Since the market has become more competitive than before corresponding with Agency theory (Basu & Lederer, 2004). With the latest MES tools, the information sharing inside a manufacturing system will be enhanced which will lead to a higher productivity and efficiency and an increased profit for the company (McClellan, 2001).

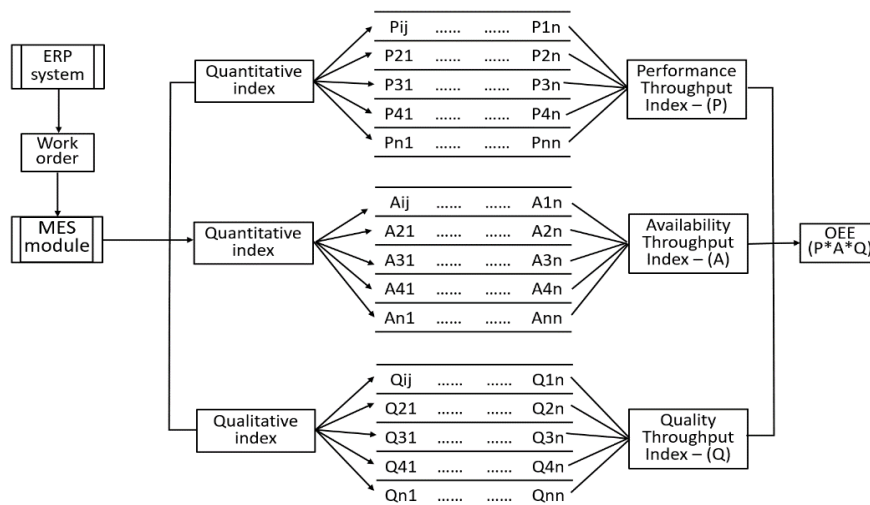
Information-theoretic approaches have been largely displaced by information processing methods, couple of examples of which are reviewed in the domains of memory and thinking (Baird, 1984). While using DuPont model to visualize the impact under OEE parallel calculation that manufacturing improvements can have on financial performance (Leroux, 2020). Edge Computing Model (ECM), which calls for processing the data at the edge of the network, edge computing has the potential to address the concerns of response time requirement (Shi et al., 2016). There are many types of model, High level business process model for example Porter’s Value Chain, Task Level model for example the Organization Chart. In implementing the MES into the system of Work-flow model to see the steps of work order done inside the enterprise in reaching an activity’s goal. Especially handling snags of internal or external transactions related with SMEs, which is chosen as the main guideline because it is a systematic approach to execute a project effectively and efficiently in form of a framework under Dynamic Systems Development Method (DSDM), which is an agile software development approach, consists of five phases: feasibility study, business study, functional model iteration, design and build iteration, and implementation (Stapleton, 1997).

A scale ratio approach is upending side effect of chronic pandemic in manufacturing industry and marketing services based on simulation optimization as an alert under parameters in data acquisition. These include Performance assessment software, Availability dynamic acquisition software, and Quality modeling software, and so on. If an application is inherently misfit, it is the project manager’s fault (PMI, 2017). However, even if an application is working properly and final data is flawed, the supervisor still gets the criticism on site. Frustrations of users between GIGO and QIQO (Techopedia, 2021), which is the work-order-orientation, application-friendly way of expressing why an output is approaching accurate under the goal of quality index.

3. DATA AND METHODOLOGY

A mathematical model that is improved, and developed the OEE of individual work order by hedge eta in this chapter. Typically, the final model must be launched to balance and improve variable elements of work order. The model includes indexes of OEE as follows: Performance index, Availability index, and Quality index under qualified scale ratio of throughput yield index.

Figure 4: A Model of Module Cooperative Array Matrix



These three indexes of category normally are not full marks, account for speed losses as performance, downtime losses as availability, and defect losses as quality. If there is no losses any kind of sufficient conditions under flexible rolled management, then the OEE is 100%. Establish an OEE necessary baseline, the existing formula is as below:

$$OEE = P * A * Q$$

When QEE = 1, and $0 < P \leq 1$; $0 < A \leq 1$; $0 < Q \leq 1$;

$$\text{Equilibrium at quotient: } OEE = P * A * Q + \eta$$

$$\text{Then, } \eta = OEE - P * A * Q$$

If there is nothing done so already, then review the hedge eta. Once the eta shows where the loss stands, work on the hedge eta, because it will put bucks on SMEs' bottom line and give a concrete numbers to justify additional balance improvements. A model for calculating the optimal eta coefficient can be constructed as:

$$\text{Max } OEE = \sum_{j=1}^m \sum_{i=1}^m p_j q_{ij}$$

$$\text{S.T. } \eta_i = OEE - \sum_{j=1}^m OEE_{ij} \quad i = 1 \dots m$$

$$\sum_{i=1}^m \eta_i \leq z$$

$$a_{ij} = f(q_{ij})$$

$$0 < q_{ij} \leq y_i$$

Where OEE equal to 1;

$$OEE = 1;$$

η_i , is the loss ratio of index of individual work order;

And, z is upper limit of the corresponding index of loss.

The y_i is upper limit of quality index.

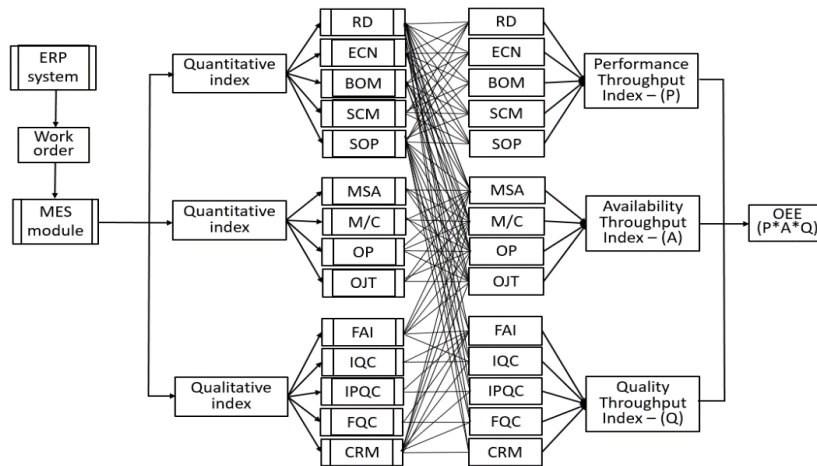
Using live OEE data gives related hard facts of work order which can demonstrate the constraints in individual production process. Actually, the SCADA and TQM have been doing well with data acquisition, which provides fast, reliable, and accurate feedback, these key monitor factors are critical success factors (CSFs) based on Delphi Method after data acquisition as shown as Table 1.

Table 1: Critical Success Factors based on Delphi Method

Ex- pert	R D	E C N	B O M	S C M	S O P	S C M	M S A	M / C	O P	O J T	P L M	W M S	F A I	I Q C	I P Q C	F Q C	O Q A	C R M	S R P C
PE	⊙	⊙	⊙	-	⊙	-	⊙	⊙	⊙	-	⊙	-	⊙	⊙	⊙	⊙	-	-	⊙
IE	⊙	⊙	⊙	⊙	⊙	-	⊙	⊙	⊙	⊙	-	-	⊙	⊙	⊙	⊙	-	⊙	-
PC	⊙	⊙	⊙	⊙	⊙	-	⊙	⊙	⊙	⊙	-	⊙	⊙	⊙	⊙	⊙	-	⊙	-
Total	3	3	3	2	3	0	3	3	3	2	1	1	3	3	3	3	0	2	1
Acc.	●	●	●	●	●		●	●	●	●			●	●	●	●		●	

While CSFs of SMEs implementation are mature concepts and have received considerable attention for over a decade, and have very often focused on specific aspects of the implementation processes. Resultantly, there is (1) the experienced experts documented that encompasses all significant CSF considerations, and (2) the theoretical experts get into the important factors of successful implementation. These critical items of RD, ECN, BOM, SCM, and SOP stand for performance index, these critical items of MSA, M/C, OP, and OJT stand for availability index, these critical items of FAI, IQC, IPQC, FQC, and CRM stand for quality index. These critical items make overall maintenance easier, are backed up by edge computing of its MES module as shown as Figure 5. Key monitor critical items from SCADA and TQM.

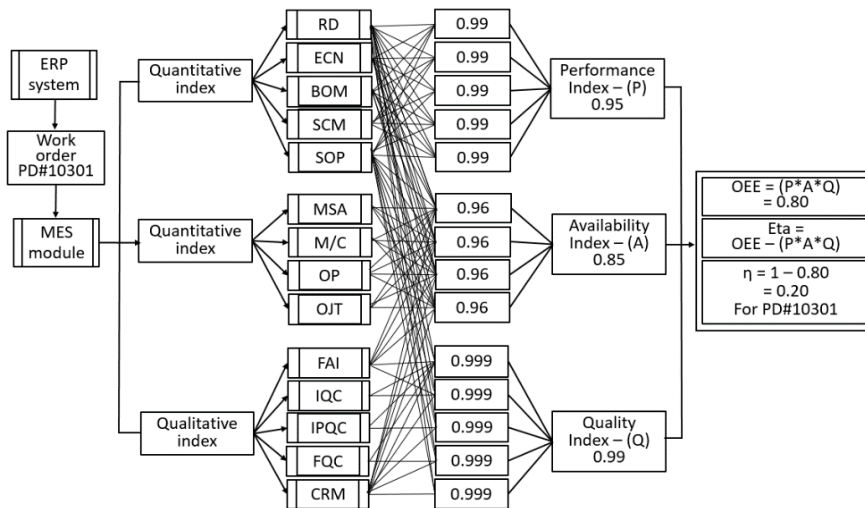
Figure 5: Key Monitor Critical Items from SCADA



4. FINDING AND DISCUSSION

The effectiveness of the model proposed in this study is illustrated using a case study. The hypothetical work order of ERP can be concurrently executed by MES. Variances in costs as shown in Figure 6, plotting and indicating change in scale indexes of performance, availability, and quality. Such costs could include all of the cost elements which may have a trade-off against multilayer dependence and independence. This means all costs of every kind assembled to deliver the final product to ultimate users, including the cost of intangibles which affect perceived value. Furthermore, an accepted CSFs are qualified and approved factors for internal critical items of P, A, and Q. For exploring the model of case maximum spaces, the work order of PD#10301 follows the concept of simulation-based optimization.

Figure 6: Qualified and Approved Critical Items



It combines the output of three hierarchical different outcomes to a kind of systematic enumeration of factor combination, the ratio of 0.99 fills out each critical item of performance at RD, ECN, BOM, SCM, SOP, and RTY of final performance index at 0.95; the ratio of 0.96 fills out each critical item of availability at MSA, M/C, OP, OJT, and RTY of final availability index at 0.85; in corresponding with $\pm 3\sigma$, the ratio of 0.999 fills out each critical item of quality at FAI, IQC, IPQC, FQC, CRM, and RTY of final quality index at 0.99. Both OEE and Eta are the 0.80 and the 0.20 as shown as Figure 6. It shows that among these a search procedure based on the idea rolled throughput yield leads to the best results in this context.

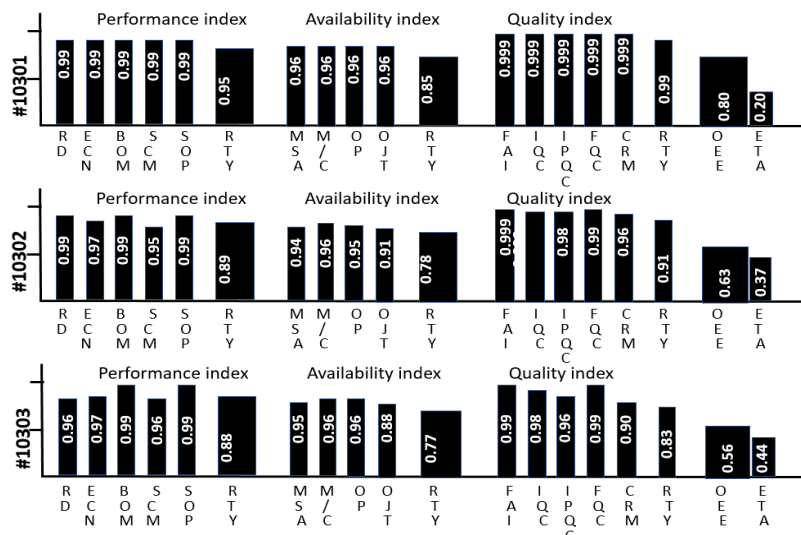
Continually, the model is fed by work order #10302 that the performance critical item of 0.99 at RD, 0.97 at ECN, 0.99 at BOM, 0.95 at SCM, 0.99 at SOP, and RTY of performance index at 0.89; the availability critical item of 0.94 at MSA, 0.96 at M/C, 0.95 at OP, 0.91 at OJT, and RTY of availability index at 0.78; the quality critical item in corresponding with $\pm 2\sigma$, the index of 0.999 at FAI, 0.98 at IQC, 0.98 at IPQC, 0.99 at FQC, 0.96 at CRM, and RTY of quality index at 0.91; both OEE and eta are the 0.63 and the 0.37. And the #10303 that the performance critical item of 0.96 at RD, 0.97 at ECN, 0.99 at BOM, 0.96 at SCM, 0.99 at SOP, and RTY of 0.88; the availability critical item of 0.95 at MSA, 0.96 at M/C, 0.96 at OP, 0.88 at OJT, and RTY of availability index of 0.77; the quality critical item in corresponding with $\pm 1\sigma$, the index of 0.99 at FAI, 0.98 at IQC, 0.96 at IPQC, 0.99 at FQC, 0.90 at CRM, and RTY of quality index of 0.83; both OEE and eta are the 0.56 and the 0.44; which creates work order #10301, #10302, and #10303 different RTY, OEE, and Eta as shown as Table 2.

Table 2: Ratio of RTY, OEE and ETA

CSF	P (%)					A (%)					Q (%)					OEE (%)	η (%)		
	R D	E C N	B O M	S C M	S O P	R T Y	M S A	M / C	O P	O J T	R T Y	F A I	I Q C	I P Q C	F Q C			C R M	R T Y
10301	99	99	99	99	99	95	96	96	96	96	85	999	999	999	999	999	99	80	20
10302	99	97	99	95	99	89	94	96	95	91	78	999	98	98	99	96	91	63	37
10303	96	97	99	96	99	88	95	96	96	88	77	99	98	96	99	90	83	56	44

While lower RTY driving lower OEE, when SMEs see improvements in eta, these constraints are naturally being minimized. With these data in hand, supervisor can easily model the value of equipment, people, and process to improve final OEE and affiliated ROI. Improving OEE can help SMEs achieve all of these targets under reducing down time, waiting time, move time, queue time, setup time, and seven wastes. Because it is designed to review and improve operation efficiency and effectiveness as shown as Figure 7, as comparison simulation among three outcomes of P, A, and Q.

Figure 7: Comparison Simulation among Three Outcomes of P, A, & Q

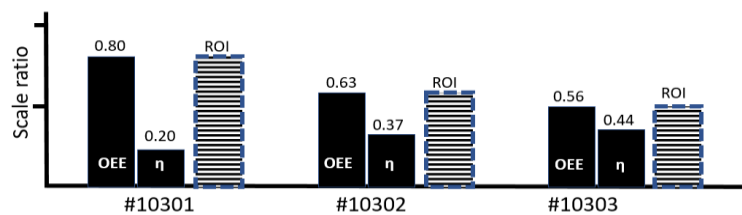


OEE is a lean manufacturing tool and universal best practice to monitor, alert, evaluate, and improve the efficiency of an operation process. These could be a research center, assembly line, machine cell, warehousing flow, packaging line, punching machine, logistics, and so on. Furthermore, by improving hedge eta in an ongoing quest to eliminate waste in every aspect, people improve

most of the other critical manufacturing KPIs based on available trace and track system, including RD, ECN, BOM, SCM, SOP; MSA, M/C, OP, OJT; FAI, IQC, IPQC, FQC, and CRM, and so on.

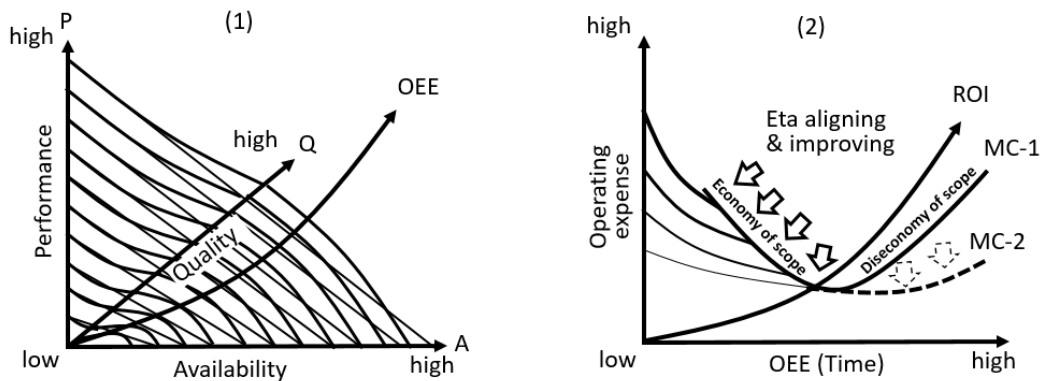
Reasons why using OEE to understand the ROI of decisions is vital. For couples of years, ROI has been the primary means of justifying investment rationale as shown as Figure 8, Relationship among OEE, Hedge eta and ROI.

Figure 8: Relationship among OEE, Hedge ETA and ROI



A kind of ratio change another kind of ratio follows change as shown as Figure 9 (1) and (2). The Figure 9 (1) that it represents an architecture of interconnection among P, A, Q, and OEE. Typically, the Figure 9 (2) must follow the curve of marginal cost (MC) production definition, the MC-2 (marginal cost-2) should replace MC-1 (marginal cost-1) to last comparative advantage maximizing after aligning and improving of Eta. The ratio correlation between ROI and OEE is called positive proportional relationship. Conversely the ROI and Operating expense is called inverse proportional relationship as a connotation stand for $ROI = OEE / \text{Operating expense}$, which corresponds with Economy of Scope yet.

Figure 9: (1) P, A, Q, OEE and (2) Operating expense, OEE, MC-1, MC-2, ETA and ROI



5. CONCLUSION

Focus means about making it simple. Sociable focuses in checking up outcomes of every work order and system module by observing changes in their state without being unequivocally customized. Solitary looks at prior probability between unstructured information entry automatically and changing structured operation procedure activities appropriately. The curable reason of data acquisition is to assemble calculations that can get input information and utilize factual investigation to foresee a systemic yield, while refreshing real idle time moves toward archiving the economy of scope on financial outcome as Value-in, Value-out (VIVO), which is a phrase that refers to the fact that the value of inputs simultaneously influences the value of the output under opportunity cost.

The introduction and adoption of simple eta allows us to monitor and audit current production data, which is replaced and aligned by at the assurance level under the prior probability, then displaying on e-dashboard, including live-time updated data transaction of machine, operator, automatic testing equipment, assembly line, quality inspection, and cash flow, etc. To do so, SMEs should consider the interiority at first, also a proposed front end of edge computing has by looking at improvements in flaw of each module. Once this kind of investigation is accomplished by eta, it may then determine the way which should mitigate the consequence of systemic collapse. With this new capability, SMEs can definitely reform the systemic risk and the diminishing marginal returns to correspond with the decision making method of live evaluating externality.

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SYSTEMATIC LITERATURE REVIEW ON BLOCKCHAIN ADOPTION IN BANKING

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ABSTRACT

Purpose- Blockchain has emerged as high impact disruptive technology and surpassed most of the aggressive predictions in banking and finance domain. The changing landscape in digital banking has forced the entire banking sector to look at blockchain technology as future of transactions. Blockchain is disrupting the banking industry and contributing to the increased efficiency and speed in banking. However, there exists a gap in research and development into block-chained processes in banking from an academic perspective, and this paper is an attempt to put together the research work done in the field of blockchain adoption in banking.

Methodology- This paper's literature review process follows common and established guidelines (Levy and Ellis, 2006; Okoli, 2015; von Brocke et al., 2009; Webster and Watson, 2002) and is summarized thoroughly. We considered the IS literature in both the blockchain and the banking context. In the first step, we conduct a separate review on both streams of literature to derive a general understanding of their current state of development. In the second step, we then conflate the relevant literature and discuss it within a joint analytical framework. In doing so, we identify paths for future research and discuss the potential of blockchain technology for banking and finance sector.

Findings- In this paper we discuss the impact that blockchain will have on banking in future and show the increasing importance of distributed ledger based transactions for the banking industry. Finally, this paper brings together the research work published in several reputed databases, in hope of motivating more active engagement by academics, researchers and bankers alike. A comprehensive review of the blockchain adoption in banking to date and across the geographic areas is presented as a result of comprehensive review of literature.

Conclusion- The collaboration of blockchain and banking is not very old, comparatively novice and we have tried to include all the significant studies till date across various databases of research.

Keywords: Blockchain, banking, fintech, distributed ledger technology, Blockchain technology adoption.**JEL Codes:** M10, M15, O32, O33.

1. INTRODUCTION

The blockchain is one of the world's leading and disruptive technology for digital assets. We are using new technology to build a better financial system. The term "Blockchain Technology" typically refers to the clear, trusted, the in public accessible ledger that allows us to securely transfer the possession of unit's important exploitation public key encryption and proof of work methods. The technology uses suburbanized agreement to keep up the network, which means it is not centrally controlled by a bank, corporation or government.

The financial sector has become part of our daily life interaction the lure of blockchain was its method of verifying and tracking transactions. Instead of a trustworthy third party or a financial organization, it depends on agreement among a peer-to-peer network of computers supported complicated algorithms. Blocks of time-stamp transactions are decentralized on all systems. Blockchain is currently a concept that has received significant attention in financial technology (FinTech). It combines several computer technologies, including distributed data storage, point-to-point transmission, consensus mechanisms, and encryption

algorithms. It has also been identified as a disruptive innovation of the Internet era. However, as blockchain is a major breakthrough in data storage and information transmission, it might fundamentally transform the existing operating models of finance and economy, which might lead to a new round of technological innovations and industrial transformation within the FinTech industry (Mu Qi-Guo 2016).

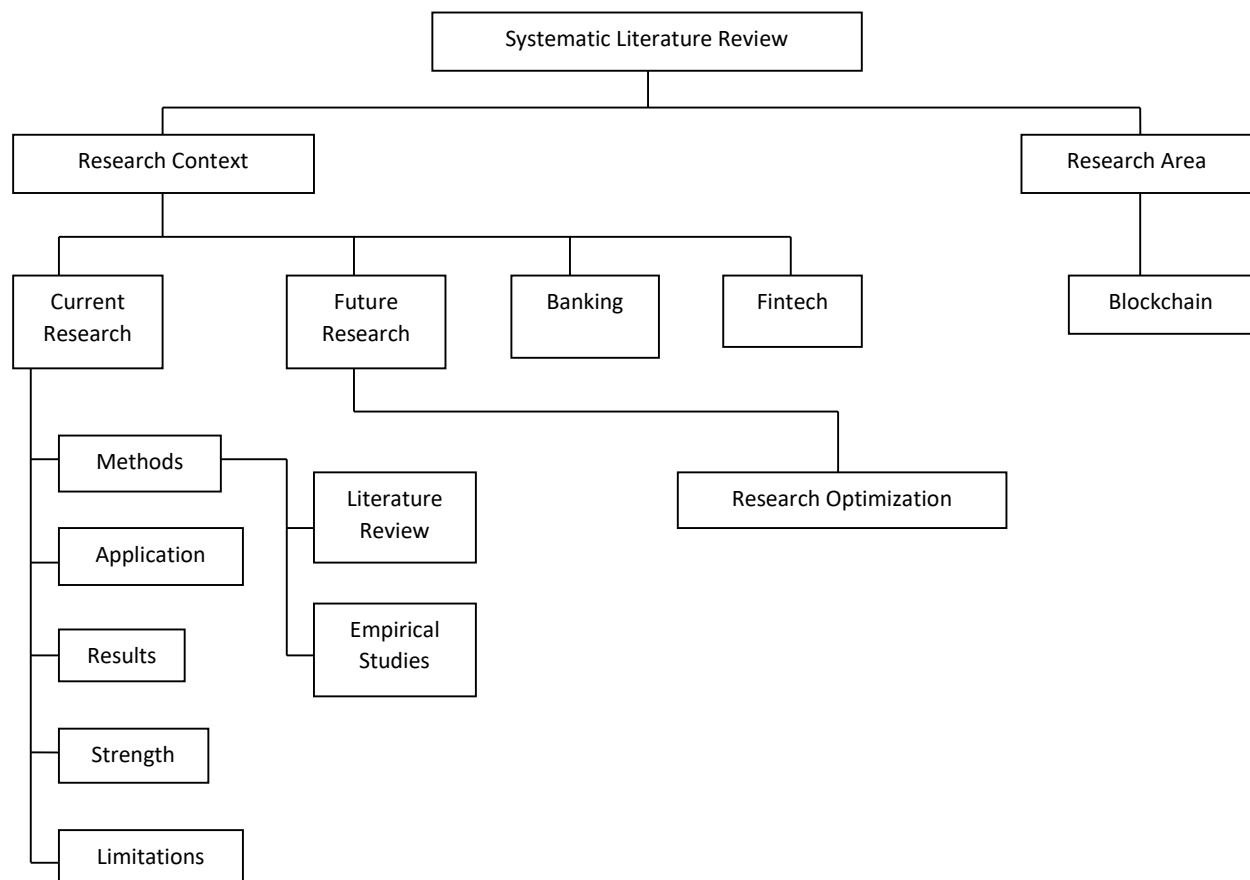
Blockchains are decentralized and permission less, which can lead to major disruptions in the financial sector, especially in payment clearing. Since 2015, a number of major international financial institutions have begun to formulate plans for the blockchain sector. Goldman Sachs, J.P. Morgan, UBS, and other banking giants have all established their own blockchain laboratories, working in close collaboration with blockchain platforms, and published a series of studies on this topic. Goldman Sachs even filed a patent for transaction settlement based on blockchain technology. Additionally, various national stock exchanges, such as the Nasdaq Stock Market and the New York Stock Exchange have also conducted in-depth research on blockchain technology. On December 30, 2015, Nasdaq announced that it had completed its first securities transaction using the blockchain transaction platform Linq. Furthermore, the US Depository Trust & Clearing Corporation, Visa, the Society for Worldwide Interbank Financial Telecommunication, etc. have also expanded their plans in the blockchain technology sector.

The paper starts with the introduction to the blockchain technology and its potential impact on financial institutions. The second phase of the paper describes the methodology for conducting the systematic literature review including the research context and research area along-with the review process. The criteria for inclusion or exclusion of research work is framed and followed religiously during the process. The databases and qualitative synthesis of the review is selected and followed in well-defined scientific way. The systematic literature review is carefully presented in tabular form, selecting twenty-two papers, meeting our criteria for inclusion. Path for future research is discussed followed by conclusion.

2. RESEARCH METHODOLOGY

The methodology used for the selection and preparation of this paper is presented in Figure 1. The SLR blueprint is broadly classified in to: Research Context and ii) Research Area

Figure 1: Systematic Literature Review Map



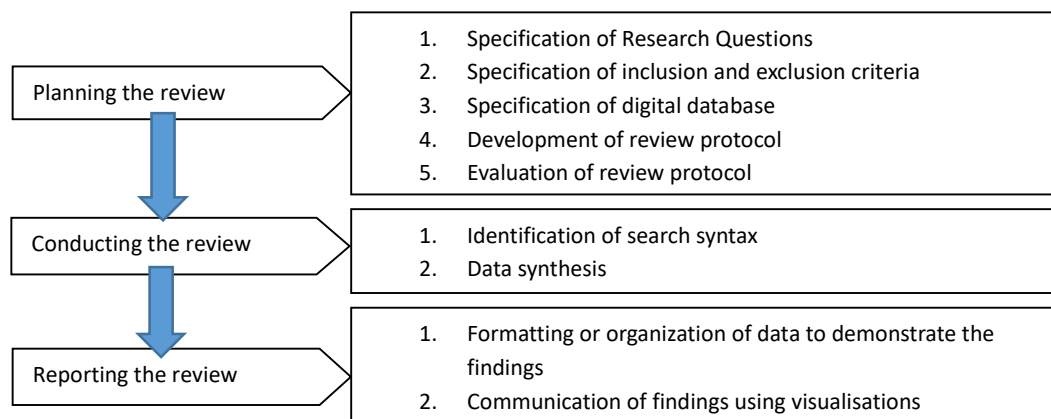
The research context covers first, current research by providing information by providing information in terms of methods, application, results, strength, and limitations using different research articles. Two types of research were examined, namely, literature reviews and empirical studies. The selected databases are EBSCO, Emerald, Elsevier, ProQuest, Scopus and Google Scholar digital databases with linear and cross searches. Secondly, it covers the future research and directions highlighting the direction of the research. The research area of this study is targeted to banking and fintech industry.

An SLR collects empirical data using a formal protocol [] and is typically the collection of research studies in a variety of fields []. The current study conducts an SLR using the guidelines outlined by []. The SLR given in this study presents the reader with a broad view of knowledge on the previous underlying studies included in this research. This research is conducted in three different stages:

- a. Planning the review
- b. Conducting the review
- c. Reporting the review

Each of the above stages is further conducted through sub stages presented in Table 2.

Figure 2: Systematic Literature Review Process



2.1. Planning the Review

The objective of the research to search and collect the current research in terms of method, and results in blockchain adoption in banking and fintech sectors, and then present the results.

Inclusion Criteria: The following inclusion criteria (IC) is used to select the literatures to be included in the review.

IC 1: The keywords used are: “blockchain”, “banking”, “fintech”, “Distributed ledger technology”, “Blockchain technology adoption”. The operators used as syntax are OT and AND. The AND operator signifies that both keywords must be present in the search queries and OR means that at least one keyword must be present in the query.

IC 2: Studies published before December 31, 2019

IC 3: Studies published in English

IC 4: Studies limited to document type of journal articles

IC 5: Include abstract-based studies

IC 6: Include full-text-based studies

Exclusion Area: The exclusion criteria (EC) used to filter out the literature in this SLR are;

EC 1: Eliminate duplicate studies with matching title and /or Digital Object Identifier, doi.

EC 2: Eliminate the studies based on quality evaluation

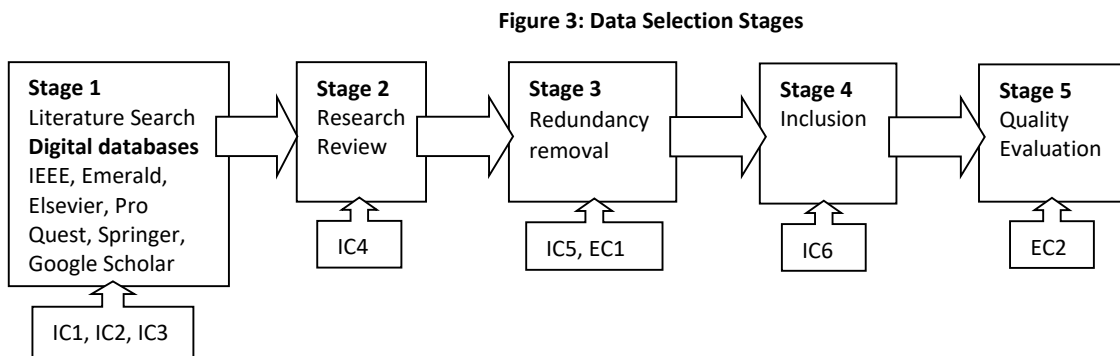
Digital Databases: The digital databases used to collect the data for the review of papers are;

- i) IEEE
- ii) Emerald
- iii) Elsevier
- iv) ProQuest
- v) Springer
- vi) Google Scholar

Review Protocol Development: Google Scholar was first considered to extract data from these digital databases because: i) there is an extensive amount of studies available in context with our topic that are indexed, ii) it is the leading digital literature database which includes peer reviewed papers, iii) it has extensive scientific and inter disciplinary information. EBSCO, Emerald, Elsevier, ProQuest and Scopus were also reviewed for the papers. Furthermore, additional relevant papers matching the context of this study were included on the basis of full text citation.

Review Protocol Evaluation: To support the criteria of inclusion, exclusion, and the selection of research data, it is vital to examine and evaluate the quality of studies. In fact, the purpose of the quality assessment is to make sure that the results of the study are suitable and impartial.

The various stages for data selection are shown in Figure 2 in a sequential manner. Each of the stage shown in the figure is executed with the accompanying IC, inclusion criteria and EC, exclusion criteria.



2.2. Conducting the Review

The search syntax used in this SLR for selecting the research papers is shown in Table1.

Table 1: Search Syntax of the Selected Research Papers

Data Source	Search Syntax
EBSCO	(TITLE-ABS-KEY (“blockchain”) OR TITLE-ABS-KEY (“blockchain adoption”) OR TITLE-ABS-KEY (“banking” OR “fintech”) AND (LIMIT-TO(LANGUAGE, “English”)))
Emerald	(“blockchain” OR “blockchain adoption” OR “banking” OR “fintech”) AND (LIMIT-TO(LANGUAGE, “English”))
Elsevier	(“blockchain” OR “blockchain adoption” OR “banking” OR “fintech”) AND (LIMIT-TO(LANGUAGE, “English”))
Proquest	(“blockchain” OR “blockchain adoption” OR “banking” OR “fintech”) AND (LIMIT-TO(LANGUAGE, “English”))
Google Scholar	(TITLE-ABS-KEY (“blockchain”) OR TITLE-ABS-KEY (“blockchain adoption”) OR TITLE-ABS-KEY (“banking” OR “fintech”) AND (LIMIT-TO(LANGUAGE, “English”)))

TITLE-ABS-KEY: The keywords are searched for in the: title, abstract and keywords of the paper.

AND: This operator means that both keywords in the searched item should be there in the conditional output of the search.

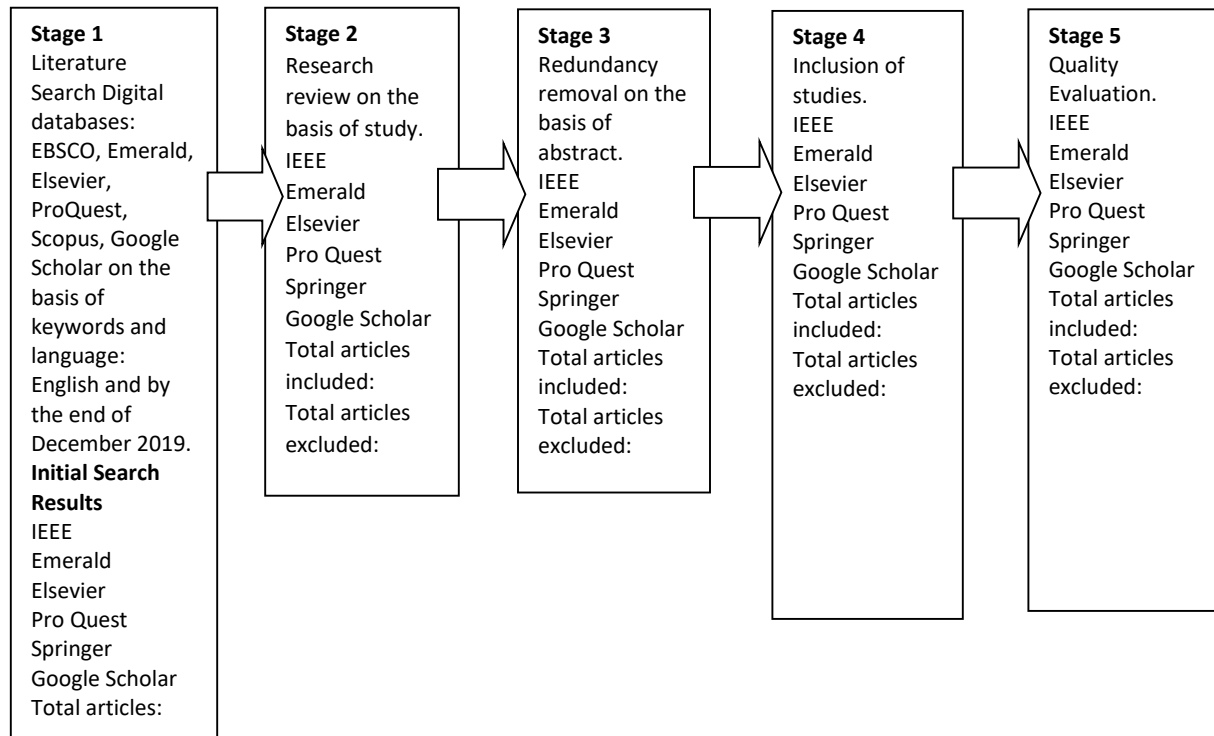
OR: This operator means that any one keywords in the searched item should be there in the conditional output of the search.

LIMIT-TO-LANGUAGE: This operator means that the search must be limited to English language only.

Data Synthesis - To explain the methods, results, applications and limitations of the current and available research, a qualitative meta-synthesis technique is used. Figure 4 presents the output of this technique. Figure 4 shows;

- I. Search strategy including linear literature search
- II. Number of studies at each stage of the process
- III. The summary of studies selected

Figure 4: Output of the Qualitative Synthesis Technique



In stage 1, a total of 42 were found with the selected keywords, English language and restricted until December 2019. The proceedings of the papers selected and chosen for the study can be easily understood from the Figure 4. In all 23 papers were found to be relevant to this study.

The list of selected papers considered for this study is presented in Table 1 and Appendix A.

Figure 5: Distribution of Papers by First Author and by Category

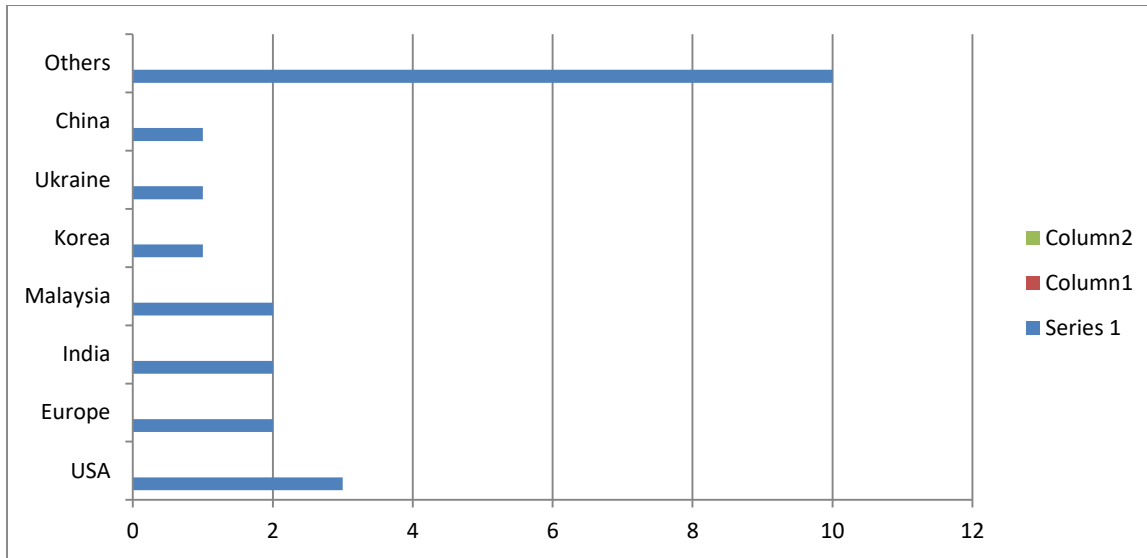


Figure 5 shows the distribution of research papers by the first authors' country and it indicates that the United States has contributed the highest number of articles among other countries.

Figure 6: Distribution of Papers by Year of Publication and Digital Database

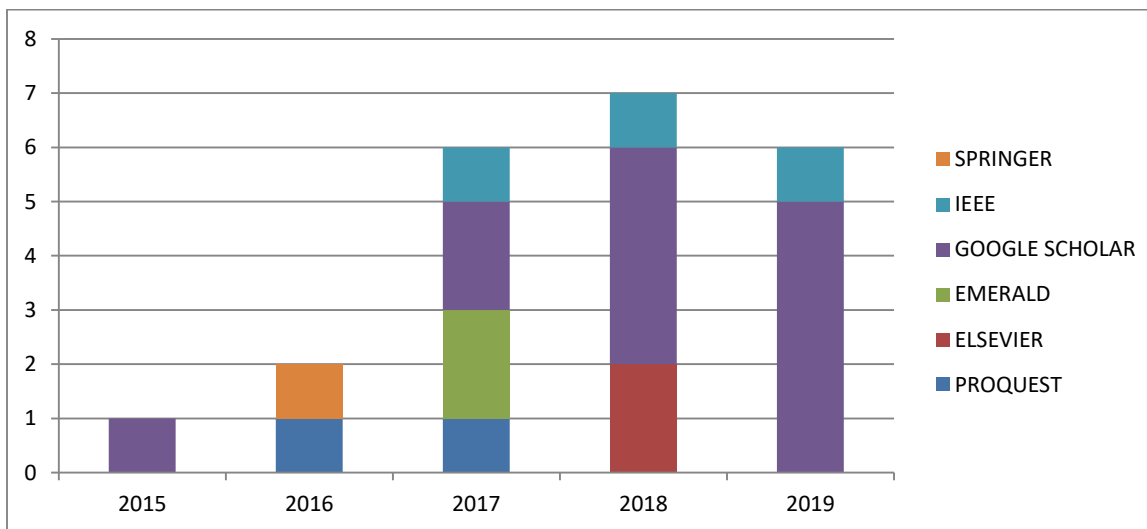


Figure 6 shows the distribution of papers by year of publication and digital databases, and it indicates that 2018 had the highest number of articles for this study.

3. LITERATURE SURVEY

The retrieved articles were analyzed based on title, abstract, and keywords. The two main selection criteria were chosen: 1) key word based selection on Blockchain technology and its application in the banking industry. 2) the international standard published research in the most respected journals. As a result, 22 articles were considered for further review. When in doubt, the paper was selected for a full-text analysis.

Gupta and Gupta (2018) provide an overview of Blockchain Technology with its benefits and emphasizing on the applications of the technology in the Indian Banking Sector. The paper gives the insight of various challenges and global perspective of Blockchain Technology in banking industry. One disruptive innovation which is changing the banking sector globally is Blockchain Technology (BCT). The study concludes that, blockchain will evolve as a disruptive force in transforming Indian Banking Sector by making banking transactions more secure, faster, transparent, and cost effective. The authors have used secondary data for the current study. An empirical research can be undertaken in future to present the growth of Bitcoin Technology in India with respect to other developing countries.

Guo and Liang (2016) conclude that blockchains have a technological advantage over banks as credit intermediaries, it is still too early for this technology to completely disrupt the existing financial. Therefore, a “multi-center, weakly intermediated” scenario is likely to emerge. This is where banks use blockchain technology to improve their payment clearing systems and overcome certain obstacles in information communication, while also forming consortiums, thereby consolidating their position. Chinese banking and fintech markets are evolving with the implementation of new technology. Chinese Blockchain Technology and Application Development, 2016. Blockchain applications also promote the formation of “multi-center, weakly intermediated” scenarios, which will enhance the efficiency of the banking industry. The decentralization and self-governance of blockchains dilutes the concept of regulation, and has a critical impact on the existing system.

Barnes (2015) confers that banks like UBS, ING and Nasdaq, are exploring the potential of the technology, be able to overcome the challenges that remain, not least security and regulatory issues. The technology behind Bitcoin – has revolutionary potential. It could transform almost every aspect of commerce and make stand-ard internet transactions seem old fashioned. We have thought about the memory of money via a blockchain. That’s an idea we would love to drill down into, but a little bit further down the road. Can we use this to replace existing technology, whether for transfers or payments or in the security space? Banks are making the choice to move to a 24/7 real-time payment service: instant payments but also instant business. Discussions of what kind of technology to use is an interesting dilemma: do you go for the brand new, not completely tested but very promising blockchain type of technology with everything in it or proven technology with databases. Rigor through TAM is required to analyze the adoption of the new technology.

Degener (2018) compares the Rabobank and fintech start-up Ripple in order to filter out implications to the business model of traditional banks integrating blockchain technology to process international payments. Ripple represents a value proposition offering a ‘blockchain-as-a-service’ solution, RippleNet, to which traditional banks can simply plug in. Ripple represents a value proposition offering a ‘blockchain-as-a-service’ solution. The current situation of the cross-border payment systems applied through the case of the Rabobank and the information technology perspective of Fiducia GAD. Further light is spot on the case of Ripple as representative of a blockchain based solution for a cross-border payment system. The findings suggest that blockchain technology is less likely to be successfully implemented by traditional banks in an isolated way. Instead, it seems more viable for banks to collaborate with fintech organizations, like Ripple, to capture value from the blockchain technology on a larger scale. The data collected is assumed to be clear, accurate, and of decent coverage for the purpose of this study. the scope of the targeted data is considered quite broad, therefore finding a decent expert to interview on the entire range of the business model is difficult.

Ittay (2017) states that the financial technology (FinTech) sector sees high potential value in cryptocurrency blockchain protocols, or distributed-ledger technology (DLT). However, the requirements and guarantees of blockchains for cryptocurrencies do not match those of FinTech—from transaction throughput to security primitives and privacy. The author explores how blockchain research beyond Bitcoin is closing these gaps and some of the challenges that remain. Blockchain systems can be roughly split into four layers. The system clients are at the top, and they observe an abstract system state, such as a balance sheet stating how much currency each account has. This abstraction is facilitated by a virtual machine layer that accepts transactions and translates them into state changes. new possibilities and challenges will continue to arise as DLT adoption increases in FinTech, the full potential of blockchain technologies will only be realized through direct and effective collaboration between the FinTech industry and the blockchain scientific and engineering community. Blockchain security relies on public verifiability of its integrity. Each node observes all blocks and transactions and can verify that the transactions are legal and the blocks are correctly formed. Nodes do not create money or replace it.

According to Hassani, Hossein, et. al., (2018), there exists a gap in research and development into blockchain-ed big data in banking from an academic perspective, and this gap is expected to have a significant negative impact on the adoption and development of blockchain technology for banking. review of the impact of blockchain in banking to date by summarizing the opportunities and challenges from a bankers’ perspective. discuss the impact that big data from blockchain will have on banking data analytics in future and show the increasing importance of filtering and signal extraction for the banking industry.

In Bates and Paul Migliore (2018) the authors explore the transformative technologies that will drive digital insertion efforts in the future, how asset managers will need to differentiate themselves in the new digital landscape and practical steps to embrace the digital frontier for organisations that are still held back by legacy technology, processes and behaviours. Investment managers have been digitising information and processes, but we have only recently moved into a new era where firms are reengineering every facet of the business upon a digital foundation. The future state design options should be derived through an open dialogue with vendors about their current and future product offerings. Leveraging the resources and scale of an external provider helps asset managers mitigate risk by minimising initial investment and leveraging technologies tested by a subset of their peer group. These considerations will become increasingly important components to a future state options analysis as the competitive landscape shifts to automation, processing of complex data and sophisticated AI toolsets. This paper considers all the innovative technologies and give reasons to either innovate or stagnate.

Umarovich and Natalia (2017) conduct the research of current trends and priorities for the blockchain technology use in order to ensure the economic security of large corporate entities. The subject of the research is a set of economic and organizational and financial relations ensuring the financial controlling effectiveness in large corporate entities, implemented with the blockchain technology application. A conceptual analysis of the current use of blockchain technology has been used to see the future road to its implementation. The application of blockchain can be further analysed in the light of significant proof. The conducted analysis of the blockchain application risks and benefits demonstrates the need in balancing risks and benefits of this technology application. In the Russian practice the named trend is supported: the most frequently the blockchain technology is used in financial markets.

Azarenkova and Shkodina (2018) focused on proposing the ways to reduce the negative impact of financial technologies on the financial system stability. The analysis of the financial technologies impact on the stability of financial system shows that the lack of institutional support for new financial technologies is the most important catalyst for the financial industry destabilization and the formation of financial bubbles in various market segments. This paper considers the application of new technology at global level. The global scenario does not allow to study in an organized and regulated manner. Country specific proofs are required.

Petrushenko and Kozarezenko (2018) identify disruptive challenges for financial institutions need to adapt. The aim of the research is to investigate the prospects of FinTech engagement into the system of international transfers processing in Ukraine. The research investigates the value and the investment flows structure as most obvious indicators of FinTech and describes types of payments relationships there. The paper considers relationships between enterprises, financial institutions and individuals, which are formed in digital payments. Conducting a comparative analysis of the regular and innovative cross-border payment processes, developing a methodology for evaluating the impact of FinTech engagement into the system of cross-border payments in Ukraine, and investing foreign experience of FinTech start-ups participation in the international money transfers system. The paper shows that investments and profits of cross-border payment solution can vary significantly between countries, since each country has separate and diverse national payment systems. FinTech can help to proceed in this direction enhance the system and allow people to proceed more effective. There is a high potential of FinTech for cross-border payment processing in near future.

Cocco, Pinna, et. al. (2017) paper looks at the challenges and opportunities of implementing blockchain technology across banking, providing food for thought about the potentialities of this disruptive technology. Defined three quantities: "economic efficiency", "operational efficiency", and "efficient service". First EE, defined as the ratio between the value of bitcoins mined by the power consumption of 1 kWh, is characterised by a strong variability because it is influenced by the growing of the Bitcoin price, the Bitcoin popularity and the power consumption of the network. Second, we found that the OE, defined as the ratio between the value of voluntary fees and the energy cost of a transaction, is currently growing, indicating that fees are becoming more and more important to assure the sustainability of the Bitcoin system. In fact, mining operations will be remunerated only until the sum of circulating bitcoins reaches 21 million. SE, defined as the ratio between the number of transactions validated by the power consumption of 1 kWh, which describe how much electricity the network spends to number of transactions per block is limited, and the SE cannot increase. Perform its main service, i.e., to wire bitcoin.

In Christopher (2019) the bridging model is applied first to traditional banking, to illustrate and analyze the enforcement mechanisms underpinning the U.S. dollar as currency and the banking system as a whole, and to demonstrate that the enforcement mechanisms (government backing and regulation) are not as robust as generally believed. The bridging model is then applied to Bitcoin, to show not only that the system requires more trust than is generally understood, but also that both currency and payment systems benefit from the involvement of trusted intermediaries in response to problems and crises. This article undertakes a critical deconstruction of Bitcoin and the blockchain, their themes of democracy and transparency, and the idea that they are trustless. The article enforcement and trust in contract formation model, which allows for a more nuanced

understanding of the interplay between conceptualization of the role of trust in business and contracting: the bridging then proposes a new framework. The Bridging Model Applied to Traditional Banking: As an illustration of the bridging model in application, this Part applies the model to traditional banking, understood roughly here to mean the brick-and-mortar U.S. banking system of the past hundred years or so. Although Bitcoin contains mechanisms that make it predictable and reliable—the regular production of bitcoins, the publicly verified ledger—these mechanisms still rely on human involvement. Moreover, the Bitcoin code may strip away instances where trust and human overrides are actually preferable, in that they allow considered responses to unanticipated problems. More imperial research is needed to verify and establish the bridging model in bitcoin technology.

In Gandhi, Rupali, et. al (2019), a comparison of the current banking system and the proposed system based on the blockchain technology. To study the feasibility of blockchain technology in the banking system. A proposed model for integration of blockchain into banking. The real time execution of the banking based on blockchain is to be studied further and remains a challenge to the implementers and decision makers. The model needs to be tested further by some use cases in the area.

Yusof, Munir, et. al. (2018) research is aimed at investigating the factors influencing the behavioral intention to adopt blockchain technology by the Malaysian banking institutions. Unified Theory of Acceptance and Use of Technology (UTAUT) with key determinants such as Performance Expectancy, Effort Expectancy, Social Influence and Facilitating Condition has been adopted in this study. Using questionnaire instruments, 149 data from banking respondents in five states have been collected and analyzed. Of the four key determinants, only Effort Expectancy shows an insignificant relationship with the behavioral intention to adopt blockchain technology. the research should be tested with more rigor and with more variables and in other contexts also.

K Meenakshi and George (2018) highlight one of the initiative that can be taken by banks to attain sustainability to the great extent, BlockChain technology being solution to major problems can be implemented in banking process to eliminate unwanted procedures, intermediaries and to go paperless, which enables bank to provide environmental-friendly service. The absence of a common record is a very costly problem, BlockChain does resolve that challenge. Blockchain adoption to save natural resources. Adoption of BlockChain will definitely be a major change in the banking history because it is like banking without much of paper involvement and time consumption being minimal. The accountability factors will be enhanced such that any fraud committed can be detected immediately and actions can be taken immediately. The cost of maintenance of records and other data will also be reduced to great extent because of digitalization of transaction. Blockchain can do to banks what the internet did to media. customer failing to understand the working of Blockchain will still be dependent on physical banks. Certain banks have taken initiatives to adopt Blockchain technology due to ease of operation and research is being carried out in this field. To conclude that the blockchain will reduce the use of natural resources more work should be done analyse the impact of energy requirements in natural resources.

Popova and Butakova (2019) discuss the use of blockchain technology without tokens to protect information about banking transactions, namely, transfer amounts, card details, names of participants, etc. This topic is relevant, since the digital economy is becoming an integral part of modern life. The article analyzes the protection mechanisms of distributed databases, proposes a solution to the problem of maintaining the uniqueness of information in them based on blockchain technology without tokens and gives recommendations on the introduction of blockchain technology into modern banking systems. The blockchain is a tool which at implementation in the Banking system without mining and tokens will considerably simplify processes of maintenance of integrity and uniqueness of information on bank transactions, and its implementation in the processes of smart contracts will allow to reduce number of participants at commission of some transactions. the practical aspect of the proposed solution could be tested empirically.

Mohite (2018) helps to understand of blockchain technology and its emergence, some useful insight on regulatory challenges on the world wide adoption of this new technology in general and India in particular and finally, the purpose of this article is also to enhance the reader's understanding regarding the challenges to be encountered in future particularly by financial service providers in India due to the disruptions caused by rapid advances in technology. This article enunciates the conceptual framework and outlook of blockchain technology in general.

Future Challenges: Development and Applications. This technology is still being developed as experts and practitioners are apprehensive to applications in real life.

Regulatory Challenges: Till now, the one block chain applications have received most of the regulatory attention is Bit-coin or virtual currency to be more precise.

Cyber-Security: Much has been told in the past regarding the dangers and risk associated with the cyber security environment.

Self-Regulation: Legal codes, laws and regulations can be coded within the digital framework to facilitate automatic implementation and assist the regulators in their attempt to protect the stakeholders

This technology is still being developed as experts and practitioners are apprehensive to applications in real life. Developers are comprehending the mapping benefits accrued from this technology. The future challenges need to be studied in further detail and a workable framework may be derived.

Seretakis (2017) seeks to disentangle the myths from the realities of the so called distributed ledger technology or blockchain revolution and discuss how the legal regime can act both as an impediment and a catalyst to the widespread adoption of the technology. The bankruptcy of Lehman Brothers was followed by the dry-up of liquidity in financial markets and the simultaneous distress of multiple systemically important financial institutions. In their quest to avert an economic calamity, governments and central banks around the world decided to massively intervene in financial markets and expend vast sums of taxpayer money, in order to bailout failing financial institutions, and stabilize the financial system. Shortly after Lehman's bankruptcy, in November 2008, Satoshi Nakamoto, whose real identity remains unknown, driven in part by anger over the financial crisis, published a proposal for a peer-to-peer electronic cash system. Despite the hype surrounding distributed ledger technology, regulatory obstacles can act as an impediment to the widespread adoption of the technology in financial markets. Nonetheless, as experimentation with the technology continues and its potential benefits for financial markets are revealed, policymakers are starting to foster the development of the technology. changes to the regulatory regime, which can act as a catalyst for the application of distributed ledger technology to securities markets.

Ma and Guo (2018) propose a new blockchain-based data privacy management framework. All the countries have different strategies and regulations towards the privacy protection of data in financial scenes, such as the General Data Protection Regulation (GDPR) by European Union (EU). The framework consists of three components: a data privacy classification method according to the characteristics of financial data and a new collaborative filtering-based model and a confirmation data disclosure scheme for customer strategies based on the Nudge Theory. and and propose a set of algorithms for this management framework. future work will incorporate the testing of existing secure and scalable blockchain and the designing a layered architecture for financial applications with hybrid blockchain and feature engineering.

Rega and Riccardi (2017) explore the applications of blockchain technology in the banking industry (in particular, the current initiatives and consortia) and some key issues that must be considered in the banking context. Blockchain is celebrated as "the new Internet of Finance" and is poised to transform multiple sectors, especially the financial services. The World Economic Forum estimated that more than 1.4 billion USD have been invested in this technology. this technology could revolutionize the payment clearing and credit information systems in banks, thus upgrading and transforming them. Blockchain applications also promote the formation of "multi-center, weakly intermediated" scenarios, which will enhance the efficiency of the banking industry. several obstacles, as the technical, regulatory, and other problems of blockchain technology but, perhaps, these ones will ultimately be resolved. The write-up of the white paper needs the rigor of a research paper.

Oh and Shong (2017) suggest reviewing the suitability of the distributed structure of the Blockchain for the automation of financial institution's business process, rather than applying it to the entire financial system or individual financial institutions. The financial institutions in Korea are in the technology verification stage to introduce Blockchain technology. Since there is an insufficient amount of actual measurement data, case study method was adopted. it was discovered that the distributed characteristic of blockchain cannot be applied when actually developing financial services. Blockchain had a potential to improve the existing information handling process of financial institutions. Actually, financial institutions are introducing blockchain to improve information handling process. Currently, Bitcoin-based blockchain is an open network, in which anybody can register, and all the members can participate in the decision-making.

Yeoh (201), examines the key regulatory challenges impacting blockchain in the EU and the US. This investigation helps to draw attention to the technology underpinning virtual currencies. It also highlights other economic potentials flowing from blockchain advancement. The hands-off approach adopted in the EU and the US to a large extent bodes well for future innovative contributions of blockchain especially in the financial services and related sectors and towards enhanced financial inclusiveness. Laws and regulations could impact how far and how fast the technology could develop. Regulatory approaches would therefore need to cleverly balance against its innovative spirits while recognizing the possibility of the technology unintentionally contributing to systemic risks to the financial system. the blockchain technology needs to adapt as per the evolving regulatory framework.

Table 2: Literature Survey

#	Author	Title of Paper	Year	Name of Journal	Context	Research Area	Output	Challenges	Research Gap	Database
1	Abhishhek Gupta, Stuti Gupta	Blockchain Technology: Application in Indian Banking Sector	Vol. 19, No. 2 (July - December 2018)	Delhi Business Review	An overview of Blockchain Technology with its benefits and emphasizing on the applications of the technology in the Indian Banking Sector. The paper gives the insight of various challenges and global perspective of Blockchain Technology in banking industry	One disruptive innovation which is changing the banking sector globally is Blockchain Technology (BCT)	The study concludes that, Blockchain will evolve as a disruptive force in transforming Indian Banking Sector by making banking transactions more secure, faster, transparent, and cost effective		The authors have used secondary data for the current study. An empirical research can be undertaken in future to present the growth of Bitcoin Technology in India with respect to other developing countries.	Google Scholar
2	Ye Guo and Chen Liang	Blockchain in application and outlook in the banking industry	2016	Financial Innovation (2016) 2:24, Springer Open	Chinese banking and fintech markets	Chinese Blockchain Technology and Application Development, 2016	Blockchain applications also promote the formation of “multi-center, weakly intermediated” scenarios, which will enhance the efficiency of the banking industry	Blockchains have a technological advantage over banks as credit intermediaries, it is still too early for this technology to completely disrupt the existing financial system. Therefore, a “multi-center, weakly intermediated” scenario is likely to emerge. This is where banks use blockchain technology to improve their payment clearing systems and overcome certain obstacles in information communication, while also forming consortiums, thereby consolidating their position	The decentralization and self-governance of blockchains dilutes the concept of regulation, and has a critical impact on the existing system	ProQuest
3	Dan Barnes	Blockchain manoeuvres: applying Bitcoin's technology to banking	May-15	The Banker	banks like UBS, ING and Nasdaq, are exploring the potential of the technology, be able to overcome the challenges that remain, not least security and regulatory issues.	The technology behind Bitcoin – has revolutionary potential. It could transform almost every aspect of commerce and make standard internet transactions seem old fashioned	We have thought about the memory of money via a blockchain. That's an idea we would love to drill down into, but a little bit further down the road	Can we use this to replace existing technology, whether for transfers or payments or in the security space? Banks are making the choice to move to a 24/7 realtime payment service: instant payments but also instant business. Discussions of what kind of technology to use is an interesting dilemma: do you go for the brand new, not completely tested but very promising blockchain type of technology with everything in it or proven technology with databases	Rigor through TAM is required to analyse the adoption of the new technology	Google Scholar

4	Sven Magnus Degen	How Blockchain affects Business Models in International Banking	July 10th, 2018	11th IBA Bachelor Thesis Conference, Enschede, The Netherlands	This paper compares the Rabobank and fintech start-up Ripple in order to filter out implications to the business model of traditional banks integrating blockchain technology to process international payments. Ripple represents a value proposition offering a 'blockchain-as-a-service' solution, RippleNet, to which traditional banks can simply plug in	Ripple represents a value proposition offering a 'blockchain-as-a-service' solution, RippleNet, to which traditional banks can simply plug in	The current situation of the cross-border payment systems applied through the case of the Rabobank and the information technology perspective of Fiducia GAD. Further light is spot on the case of Ripple as representative of a blockchain based solution for a cross-border payment system.	The findings suggest that blockchain technology is less likely to be successfully implemented by traditional banks in an isolated way. Instead, it seems more viable for banks to collaborate with fintech organizations, like Ripple, to capture value from the blockchain technology on a larger scale.	The data collected is assumed to be clear, accurate, and of decent coverage for the purpose of this study. the scope of the targeted data is considered quite broad, therefore finding a decent expert to interview on the entire range of the business model is difficult	Google Scholar
5	Ittay Eyal	Blockchain Technology: Transforming Libertarian Cryptocurrency Dreams to Finance and Banking Realities	2017	THE IEEE COMPUTER SOCIETY: COVER	The financial technology (FinTech) sector sees high potential value in cryptocurrency blockchain protocols, or distributed-ledger technology (DLT). However, the requirements and guarantees of blockchains for cryptocurrencies do not match those of FinTech—from transaction throughput to security primitives and privacy. The author explores how blockchain research beyond Bitcoin is closing these gaps and some of the challenges that remain.	Blockchain systems can be roughly split into four layers. The system clients are at the top, and they observe an abstract system state, such as a balance sheet stating how much currency each account has. This abstraction is facilitated by a virtual machine layer that accepts transactions and translates them into state changes.	new possibilities and challenges will continue to arise as DLT adoption increases in FinTech, the full potential of blockchain technologies will only be realized through direct and effective collaboration between the FinTech industry and the blockchain scientific and engineering community	Blockchain security relies on public verifiability of its integrity. Each node observes all blocks and transactions and can verify that the transactions are legal and the blocks are correctly formed. Nodes do not create money or replace it.		IEEE
6	Hassan, Hossein, Huang, Xu, Silva, Emmanuel	Banking with blockchain-ed big data	Dec-18	Journal of Management Analytics, Vol. 5 Issue 4, p256-275	there exists a gap in research and development into blockchain-ed big data in banking from an academic perspective, and this gap is expected to have a significant negative impact on the adoption and development of blockchain technology for banking	review of the impact of blockchain in banking to date by summarizing the opportunities and challenges from a bankers perspective	discuss the impact that big data from blockchain will have on banking data analytics in future and show the increasing importance of filtering and signal extraction for the banking industry			Google Scholar
7	David Bates and Paul Migliore	Innovate or stagnate : Digitalisation in investment management	Jun-18	Journal of Securities Operations & Custody Vol. 10,	This paper explores the transformative technologies that will drive digitalisation efforts in the future, how asset managers will need to differentiate themselves in the new digital landscape and practical steps to embrace the digital frontier for organisations that are still held back by legacy technology, processes and behaviours	investment managers have been digitising information and processes, but we have only recently moved into a new era where firms are reengineering every facet of the business upon a digital foundation	The future state design options should be derived through an open dialogue with vendors about their current and future product offerings. Leveraging the resources and scale of an external provider helps asset managers mitigate risk by minimising initial investment and leveraging technologies tested by a subset of their peer group. These considerations will		This paper considers all the innovative technologies and give reasons to either innovate or stagnate	Google Scholar

							become increasingly important components to a future state options analysis as the competitive landscape shifts to automation, processing of complex data and sophisticated AI toolsets			
8	Albekov Adam Umrovich, Vovchenko Natalia	Block Chain and Financial Controlling in the System of Technological Provision of Large Corporations' Economic Security	2017	European Research Studies Journal	The research of current trends and priorities for the blockchain technology use in order to ensure the economic security of large corporate entities	The subject of the research is a set of economic and organizational and financial relations ensuring the financial controlling effectiveness in large corporate entities, implemented with the blockchain technology application	A conceptual analysis of the current use of blockchain technology has been used to see the future road to its implementation	The application of blockchain can be further analysed in the light of significant proof	The conducted analysis of the blockchain application risks and benefits demonstrates the need in balancing risks and benefits of this technology application. In the Russian practice the named trend is supported: the most frequently the blockchain technology is used in financial markets	Google Scholar
9	Galyna Azarenkova Iryna Shkodina	The influence of financial technologies on the global financial system stability	2018	Investment Management and Financial Innovations	The study is focussed on proposing the ways to reduce the negative impact of financial technologies on the financial system stability	The analysis of the financial technologies impact on the stability of financial system shows that the lack of institutional support for new financial technologies is the most important catalyst for the financial industry destabilization and the formation of financial bubbles in various market segments	This paper considers the application of new technology at global level	The global scenario does not allow to study in an organised and regulated manner	country specific proofs are required	Google Scholar
10	Yuriy Petrusenko Liudmyla Kozarenko	The opportunities of engaging FinTech companies into the system of cross-border money transfers in Ukraine	2018	Investment Management and Financial Innovations	The paper identifies disruptive challenges for financial institutions need to adapt. The aim of the research is to investigate the prospects of FinTech engagement into the system of international transfers processing in Ukraine	The research investigates the value and the investment flows structure as most obvious indicators of FinTech and describes types of payments relationships there. The paper considers relationships between enterprises, financial institutions and individuals, which are formed in digital payments	conducting a comparative analysis of the regular and innovative cross-border payment processes, developing a methodology for evaluating the impact of FinTech engagement into the system of cross-border payments in Ukraine, and investing foreign experience of FinTech start-ups participation in the international money transfers system	The paper shows that investments and profits of cross-border payment solution can vary significantly between countries, since each country has separate and diverse national payment systems. FinTech can help to proceed in this direction enhance the system and allow people to proceed more effectively	There is a high potential of FinTech for cross-border payment processing in near future	Google Scholar
11	Luisanna Cocco, Andrea Pinna, Michele Marchesi	Banking on Blockchain: Costs Savings Thanks to the Blockchain	Jun-17	Future Internet	This paper looks at the challenges and opportunities of implementing blockchain technology across banking, providing food for thought about the potentialities of this disruptive technology	defined three quantities: "economic efficiency", "operational efficiency", and "efficient service"	First EE, defined as the ratio between the value of bitcoins mined by the power consumption of 1 kWh, is characterised by a strong variability because it is influenced by the growing of the Bitcoin price. the Bitcoin popularity and the power consumption of the	SE, defined as the ratio between the number of transactions validated by the power consumption of 1 kWh, which describe how much electricity the network spends to number of transactions per block is limited,		ProQuest

							network. Second, we found that the OE, defined as the ratio between the value of voluntary fees and the energy cost of a transaction, is currently growing, indicating that fees are becoming more and more important to assure the sustainability of the Bitcoin system. In fact, mining operations will be remunerated only until the sum of circulating bitcoins reaches 21 million.	and the SE cannot increase and perform its main service, i.e., to wire bitcoin.		
12	Catherine Martin Christopher	THE BRIDGING MODEL: EXPLORING THE ROLES OF TRUST AND ENFORCEMENT IN BANKING, BITCOIN, AND THE BLOCKCHAIN	Aug-19	HeinOnline	The bridging model is applied first to traditional banking, to illustrate and analyze the enforcement mechanisms underpinning the U.S. dollar as currency and the banking system as a whole, and to demonstrate that the enforcement mechanisms (government backing and regulation) are not as robust as generally believed. The bridging model is then applied to Bitcoin, to show not only that the system requires more trust than is generally understood, but also that both currency and payment systems benefit from the involvement of trusted intermediaries in response to problems and crises.	This article undertakes a critical deconstruction of Bitcoin and the blockchain, their themes of democracy and transparency, and the idea that they are trustless. The article enforcement and trust in contract formation model, which allows for a more nuanced understanding of the interplay between conceptualization of the role of trust in business and contracting: the bridging then proposes a new framework.	THE BRIDGING MODEL APPLIED TO TRADITIONAL BANKING: As an illustration of the bridging model in application, this Part applies the model to traditional banking, understood roughly here to mean the brick-and-mortar U.S. banking system of the past hundred years or so.	Although Bitcoin contains mechanisms that make it predictable and reliable—the regular production of bitcoins, the publicly verified ledger—these mechanisms still rely on human involvement. Moreover, the Bitcoin code may strip away instances where trust and human overrides are actually preferable, in that they allow considered responses to unanticipated problems.	More imperial research is needed to verify and establish the bridging model in bitcoin technology.	Google Scholar
13	Harsha Gandhi, Rupali More, Nainisha Patil	A BLOCKCHAIN IN BANKING APPLICATION	Apr-19	GLOBAL JOURNAL FOR RESEARCH ANALYSIS	A comparison of the current banking system and the proposed system based on the blockchain technology	To study the feasibility of blockchain technology in the banking system	A proposed model for integration of blockchain into banking	The real time execution of the banking based on blockchain is to be studied further and remains a challenge to the implementers and decision makers	The model needs to be tested further by some use cases in the area	Google Scholar
14	Hayati Yusuf, Mai Farhana Mior Badrul Munir, Zulnur haini Zolkapli et. al.	Behavioral Intention to Adopt Blockchain Technology: Viewpoint of the Banking Institutions in Malaysia	Oct-18	International Journal of Advanced Scientific Research and Management, Volume 3 Issue 10	This research is aimed at investigating the factors influencing the behavioral intention to adopt blockchain technology by the Malaysian banking institutions. Unified Theory of Acceptance and Use of Technology (UTAUT) with key determinants such as Performance Expectancy, Effort Expectancy, Social	Using questionnaire instruments, 149 data from banking respondents in five states have been collected and analyzed	Of the four key determinants, only Effort Expectancy shows an insignificant relationship with the behavioral intention to adopt blockchain technology	the research should be tested with more rigor and with more variables and in other contexts also		Google Scholar

					Influence and Facilitating Condition has been adopted in this study					
15	MEEN AKSHI K, ANEETA ROSE GEORGE et. al.	GREEN BANKING THROUGH BLOCKCHAIN	Jan-18	International Journal of Research and Analytical Reviews	This paper highlights one of the initiative that can be taken by banks to attain sustainability to the great extent, Blockchain technology being solution to major problems can be implemented in banking process to eliminate unwanted procedures, intermediaries and to go paperless, which enables bank to provide environmental-friendly service. The absence of a common record is a very costly problem, Blockchain does resolve that challenge.	Blockchain adoption to save natural resources	Adoption of Blockchain will definitely be a major change in the banking history because it is like banking without much of paper involvement and time consumption being minimal. The accountability factors will be enhanced such that any fraud committed can be detected immediately and actions can be taken immediately. The cost of maintenance of records and other data will also be reduced to great extent because of digitalization of transaction. Blockchain can do to banks what the internet did to media	customer failing to understand the working of Blockchain will still be dependent on physical banks. Certain banks have taken initiatives to adopt Blockchain technology due to ease of operation and research is being carried out in this field	To conclude that the blockchain will reduce the use of natural resources more work should be done analyse the impact of energy requirements in natural resources	Google Scholar
16	Natalia A. Popova, Natalia G. Butakova	Research of a Possibility of Using Blockchain in Technology without Tokens to Protect Banking Transactions	2019	IEEE	this paper discusses the use of Blockchain technology without tokens to protect information about banking transactions, namely, transfer amounts, card details, names of participants, etc. This topic is relevant, since the digital economy is becoming an integral part of modern life	The article analyzes the protection mechanisms of distributed databases, proposes a solution to the problem of maintaining the uniqueness of information in them based on Blockchain technology without tokens and gives recommendations on the introduction of Blockchain technology into modern banking systems	the Blockchain is a tool which at implementation in the Banking system without mining and tokens will considerably simplify processes of maintenance of integrity and uniqueness of information on bank transactions, and its implementation in the processes of smart contracts will allow to reduce number of participants at commission of some transactions		the practical aspect of the proposed solution could be tested imperically	IEEE

17	Vikram Mohite	Reducing Uncertainty in Trade and Deciphering Future Challenges in Banking Industry Through Application of Blockchain in Technology	Jul-18	International Bulletin of Management and Economics	to understand of blockchain technology and its emergence, some useful insight on regulatory challenges on the world wide adoption of this new technology in general and India in particular and finally, the purpose of this article is also to enhance the reader's understanding regarding the challenges to be encountered in future particularly by financial service providers in India due to the disruptions caused by rapid advances in technology	This article enunciates the conceptual framework and outlook of blockchain technology in general	Future Challenges: Development and Applications: This technology is still been developed as experts and practitioners are apprehensive to applications in real life. Regulatory Challenges: Till now, the one block chain applications has received most of the regulatory attention is Bit-coin or virtual currency to be more precise. Cyber-security: Much has been told in the past regarding the dangers and risk associated with the cybersecurity environment. Self-Regulation: Legal codes, laws and regulations can be coded within the digital framework to facilitate automatic implementation and assist the regulators in their attempt to protect the stakeholders	This technology is still been developed as experts and practitioners are apprehensive to applications in real life. Developers are comprehending the mapping benefits accrued from this technology	The future challenges need to be studied in further detail and a workable framework ma be derived	Google Scholar
18	ALEXANDROS SERETAKIS	BLOCKCHAIN, SECURITIES AND CENTRAL BANKING	2017	JOURNAL OF FINANCIAL ECONOMICS 425 (2012)	This paper will seek to disentangle the myths from the realities of the so-called distributed ledger technology or blockchain revolution and discuss how the legal regime can act both as an impediment and a catalyst to the widespread adoption of the technology.	The bankruptcy of Lehman Brothers was followed by the dry-up of liquidity in financial markets and the simultaneous distress of multiple systemically important financial institutions. In their quest to avert an economic calamity, governments and central banks around the world decided to massively intervene in financial markets and expend vast sums of taxpayer money, in order to bailout failing financial institutions, and stabilize the financial system. Shortly after Lehman's bankruptcy, in November 2008, Satoshi Nakamoto, whose real identity remains unknown, driven in part by anger over the financial crisis, published a proposal for a peer-to-peer electronic cash system.	Despite the hype surrounding distributed ledger technology, regulatory obstacles can act as an impediment to the widespread adoption of the technology in financial markets. Nonetheless, as experimentation with the technology continues and its potential benefits for financial markets are revealed, policymakers are starting to foster the development of the technology	changes to the regulatory regime, which can act as a catalyst for the application of distributed ledger technology to securities markets		Google Scholar
19	Shenglan Ma, Chaonian	Nudging Data Privacy Management of	2018	International Symposium on Pervasive	this paper proposes a new blockchain-based data privacy management framework	All the countries have different strategies and regulations towards the privacy protection of data in	The framework consists of three components: a data privacy classification method according to		future work will incorporate the testing of existing secure and scalable blockchain and the	Google Scholar

	Guo, et. al.	Open Banking based on Blockchain		Systems, Algorithms and Networks		financial scenes, such as the General Data Protection Regulation (GDPR) by European Union (EU)	the characteristics of financial data and a new collaborative filtering-based model and a confirmation data disclosure scheme for customer strategies based on the Nudge Theory. and propose a set of algorithms for this management framework		designing a layered architecture for financial applications with hybrid blockchain and feature engineering	
20	Federico Giovanni Rega, Nunzia Riccardi	Blockchain in the banking industry: an Overview		White Paper	To explore the applications of blockchain technology in the banking industry (in particular, the current initiatives and consortia) and some key issues that must be considered in the banking context	Blockchain is celebrated as "the new Internet of Finance" and is poised to transform multiple sectors, especially the financial services. The World Economic Forum estimated that more than 1.4 billion USD have been invested in this technology	this technology could revolutionize the payment clearing and credit information systems in banks, thus upgrading and transforming them. Blockchain applications also promote the formation of "multi-center, weakly intermediated" scenarios, which will enhance the efficiency of the banking industry	several obstacles, as the technical, regulatory, and other problems of blockchain technology but, perhaps, these ones will ultimately be resolved.	The writeup of the white paper needs the rigor of a research paper	Google Scholar
21	JaeShup Oh, Ilho Shong	A case study on business model innovations using Blockchain: focusing on financial institutions	2017	Asia Pacific Journal of Innovation and Entrepreneurship, Vol. 11 No. 3	This paper suggests reviewing the suitability of the distributed structure of the Blockchain for the automation of financial institution's business process, rather than applying it to the entire financial system or individual financial institutions.	The financial institutions in Korea are in the technology verification stage to introduce Blockchain technology. Since there is an insufficient amount of actual measurement data, case study method was adopted.	it was discovered that the distributed characteristic of Blockchain cannot be applied when actually developing financial services	Blockchain had a potential to improve the existing information handling process of financial institutions. Actually, financial institutions are introducing Blockchain to improve information handling process. Currently, Bitcoin-based Blockchain is an open network, in which anybody can register, and all the members can participate in the decision-making		Emerald
22	Peter Yeoh	Regulatory Issues in Blockchain Technology	2017	Journal of Financial Regulation and Compliance, Vol. 25	This paper examines the key regulatory challenges impacting blockchains in the EU and the US.	This investigation helps to draw attention to the technology underpinning virtual currencies. It also highlights other economic potentials flowing from blockchain advancement.	The hands-off approach adopted in the EU and the US to a large extent bodes well for future innovative contributions of blockchains especially in the financial services and related sectors and towards enhanced financial inclusiveness.	Laws and regulations could impact how far and how fast the technology could develop. Regulatory approaches would therefore need to cleverly balance against its innovative spirits while recognizing the possibility of the technology unintentionally contributing to systemic risks to the financial system	the blockchain technology needs to adapt as per the evolving regulatory framework	Emerald

4. BLOCKCHAIN AND THE SHARING ECONOMY: PATHS FOR FUTURE RESEARCH

Academic attempts to investigate the potential of blockchain technology in replacing third parties are made (Bogneretal.,2016; Sunetal.,2016), the success of such attempts is rather limited and primarily focuses on the context of online interaction and transaction transparency (Huckle et al., 2016). Actual connections of the blockchain with the physical world are hardly addressed in the literature so far, particularly with regard to trust. A noteworthy exception is a recent paper by Pazaitis, De Filippi and Kostakis (2017), who approach the issue of “trusted interactions on top of the trustless blockchain technology” by the introduction of a so-called proof-of-value concept to verify the value of a (human) contribution to a sharing ecosystem.

Following this promising work, future research should address the design of trusted interfaces to support the successful implementation of blockchain-based sharing platforms – not only for online, but also for off line interactions. Overcoming the trust frontier without the necessity of trusted third parties will be a major challenge for future work and may provide platform operators with a business opportunity. Moreover, to better understand consumers’ perception of blockchain-based platforms, particularly with regard to the formation of trust, future research should address the conceptualization and development of adequate measurement instruments for trust in blockchain-based algorithms. Overall, we call for high degrees of rigor in the specification and discussion of the concept of trust. It is of utmost importance for both theory and practice to clearly understand the concepts, dimensions, and targets of trust to develop meaningful results. To successfully translate the hype around blockchain technology into viable sharing economy applications, both practical and research efforts will be urgently needed.

5. DISCUSSION AND CONCLUSION

In this paper, we laid the foundation for further research into the study and implementation of the blockchain technology and their integration into the banking sector. For this purpose, this paper can be considered a starting point in various research domains that will eventually analyze the various research points representing different dimensions of blockchain technology and its application and acceptance in the banking sector. For instance, finance researchers could be interested in the changes blockchain cause in the banking sector, economics researchers could further look into the consequences for the entire economy, or necessary policy changes. Digital transformation is increasingly accelerating developments in several economies and industries, similar phenomena are likely to similarly shape other industries.

We propose a classification scheme for banking practitioners to evaluate their efforts at the interaction between banks and new technology. Managers can gain insights into the shared practices and related outcomes. Considering the number of co-operations, it is understood and instituted as an eligible strategy for promoting innovation. We also found that both parties benefit from the model, and complement each other’s strengths and weaknesses. Technology play a crucial role and don’t remain the silent, lesser partner in co-operations. Thus, alliances are the predominant form of cooperation in our empirical database, and acquisitions and incubations only play minor roles. We can say that the Blockchain is going to bring a serious transformation within the banking sector. A secure distributed database of client information should be developed and shared by the different bank which will help in reducing time, effort and cost in inter-bank transactions. The information on that may be verified and audited at any time. All of the transaction data that is integrated with

a Blockchain is verified by miners and consensus rules. In a bid to evolve towards cashless society this is an appropriate time for initiating suitable efforts towards digitizing the Indian rupees through Blockchain technology. In the coming years, Blockchain will evolve as a disruptive force in transforming the Indian banking sector by making banking transaction faster, transparent. We can powerfully advocate that point is ripe for adoption of Blockchain in the Banking Sector.

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Appendix A

Study	Author	Journal	Year
S1	Abhishek Gupta, Stuti Gupta	Delhi Business Review	2018
S2	Ye Guo and Chen Liang, Ye Guo and Chen Liang	Financial Innovation (2016) 2:24, Springer	2016
S3	Dan Barnes	The Banker	2015
S4	Sven Magnus Degener	11th IBA Bachelor Thesis Conference, Enschede, Netherlands	2018
S5	Ittay Eyal	THE IEEE COMPUTER SOCIETY: COVER	2017
S6	Hassani, Hossein, Huang, Xu, Silva, Emmanuel	Journal of Management Analytics	2018
S7	David Bates and Paul Migliore	Journal of Securities Operations & Custody	2018
S8	Albekov Adam Umarovich, Vovchenko Natalia	European Research Studies Journal	2017
S9	Galyna Azarenkova Iryna Shkodina	Investment Management and Financial Innovations	2018
S10	Yuriy Petrushenko Liudmyla Kozarezenko	Investment Management and Financial Innovations	2018
S11	Luisanna Cocco, Andrea Pinna, Michele Marchesi	Future Internet	2017
S12	Catherine Martin Christopher	HeinOnline	2019
S13	Harsha Gandhi, Rupali More, Nainisha Patil	GLOBAL JOURNAL FOR RESEARCH ANALYSIS	2019
S14	Hayati Yusuf1, Mai Farhana Mior Badrul Munir, Zulnurhaini Zolkaply	Journal of Advanced Scientific Research and Management	2018
S15	MEENAKSHI K, ANEETTA ROSE GEORGE	International Journal of Research and Analytical Reviews	2018
S16	Natalia A. Popova, Natalia G. Butakova	IEEE	2019
S17	Vikram Mohite	International Bulletin of Management and Economics	2018
S18	ALEXANDROS SERETAKIS	JOURNAL OF FINANCIAL ECONOMICS	2017
S19	Shenglan Ma1, Chaonian Guo	International Symposium on Pervasive Systems, Algorithms and Networks	2018
S20	Federico Giovanni Rega, Nunzia Riccardi	White Paper	
S21	JaeShup Oh, Ilho Shong	Asia Pacific Journal of Innovation and Entrepreneurship	2017
S22	Peter Yeoh	Journal of Financial Regulation and Compliance	2017

THE ROLE AND IMPORTANCE OF GLOBAL POLICY UNCERTAINTIES IN THE DEVELOPMENT OF NEW GLOBAL FINANCIAL ARCHITECTURE

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ABSTRACT

Purpose- The purpose of this study is to calculate the periodic effects of global policy uncertainties on the development of the new global financial architecture and to discuss the results theoretically.

Methodology- Kalman Filtering method was used to calculate the dynamic coefficients in the study. Global financial development index, world trade policies uncertainty, world uncertainty, global economic policies uncertainty and global geopolitical risk indices were selected as dependent variables.

Findings- According to the results, it is observed that in accordance with the theoretical framework of the risk-return relationship, uncertainties increase financial development up to the optimal risk point, and above this, it has a negative effect on political and economic crisis periods.

Conclusion- It has been claimed that the new financial architecture should be updated due to the decline in economic freedom and the financial development that slowed down due to the Covid 19 outbreak in the post-2016 period.

Keywords: New global financial architecture, global policy uncertainties, Kalman filter.

JEL Codes: F10, G15, F02

YENİ KÜRESEL FİNANSAL MİMARİNİN GELİŞİMİNDE KÜRESEL POLİTİKA BELİRSİZLİKLERİNİN ROLÜ VE ÖNEMİ

ÖZET

Amaç- Bu çalışmanın amacı, küresel politika belirsizliklerinin yeni küresel finansal mimarinin gelişimine olan dönemsel etkilerinin hesaplanması ve sonuçların teorik olarak tartışılmasıdır.

Yöntem- Çalışmada dinamik katsayıları ve etkileri hesaplayabilmek için Kalman Filtreleme metodu kullanılmıştır. Bağımlı değişken olarak küresel finansal gelişim endeksi seçilmiş; dünya ticaret politikaları belirsizlik, dünya belirsizlik, küresel ekonomi politikaları belirsizlik ve küresel jeopolitik risk endeksleri bağımsız değişkenler olarak seçilmiştir.

Bulgular- Elde edilen sonuçlara göre, risk-getiri ilişkisinin teorik çerçevesine uygun olarak belirsizliklerin belirli bir eşik değerinde risk noktasına kadar finansal gelişimi olumlu etkilediği bunun üzerinde ise özellikle siyasal ve iktisadi kriz dönemlerinde finansal gelişimi negatif etkilediği gözlemlenmiştir.

Sonuç- Sonuç olarak, 2016 sonrası dönemde azalan iktisadi serbestlik ve Covid 19 salgını sebebiyle yavaşlayan finansal gelişme nedeniyle yeni finansal mimarinin güncellenmesi gerektiği iddiası öne sürülmüştür

Anahtar Kelimeler: Yeni küresel finansal mimari, küresel politika belirsizlikleri, Kalman filtreleme.

JEL Kodları F10, G15, F02

1. GİRİŞ

Savaş konsepti uluslararası düzenler üzerinde yıkıcı etkisi olan bir olgudur. Birinci ve ikinci dünya savaşları sonunda dünyanın yeniden siyasi, iktisadi ve finansal olarak dengeye gelmesini ve bu dengenin sürdürülebilirliğini sağlamayı amaçlayan kurumsal yapılar ortaya çıkmıştır. Bu kurumsal yapıların sağladığı uluslararası düzenlerin bileşkesi olarak savaşlar sonrasında ortaya çıkan ittifak blokları çerçevesinde ortaya çıkan siyasal, iktisadi ve finansal sistemlerin sürdürülebilirliği; küresel fırsat, tehdit

ve riskler ile ilişkilidir. Bu nedenle uluslararası siyasal, iktisadi ve finansal sistemleri çalıştıran süreçlerin opere edilmesi, izlenmesi ve kontrol faaliyetleri optimize edilmez ise potansiyel riskler sistemleri krizden kaos ve katatsrofiye uzanan süreçlere yönlendirebilir.

Tarihsel olarak küresel ve uluslararası finansal sistemlerin temelinde monarşiler ve kreditorler arasındaki ilişkiler yatmaktadır. 15 ve 16.yüzyıllarda coğrafi keşifler ile monarşik devletlerarasında kaynak paylaşım sorunları jeopolitik çatışmaları tetikleyerek savaş riskini artırmıştır. Bu risk en çok Fransa ve İngiltere arasındaki çatışmalarda realize olmuştur. Fransız ihtilali ile Fransız monarşisi yıkılmış ve Napoleon Bonaparte iktidara gelmiştir. Jeopolitik paylaşım sorunları sebebiyle artan savaş riskini düşürmek ve olası İngiltere savaşında kazanan taraf olmak için Bonaparte altın ticaretini yasaklamıştır (Ferguson, 2008).

Başlarda kreditor kurumsal yapılarla ittifak halinde olan Bonaparte'nin bu hamlesi kreditorleri İngiliz Monarşisine yaklaştırmıştır. Altın ticareti konusunda İngiliz monarşisi ile anlaşılan kreditorler 1815 Waterloo savaşında İngiltere'yi finanse etmenin karşılığı olarak bir spekülatif hareket sonucu servetlerini katlamıştır. Finansal sisteme ve siyasal sisteme yön veren temel değer altın olduğu için altın para standardı uygulamaya geçmiştir. Bir bakıma geleneksel monarşiler kreditor destekli başka bir monarşik yapıya dönüşen Fransa'nın dünya hakimiyetini engellemek için yine kreditorlerle ittifak kurmuştur (Ferguson, 2008).

1900'lü yıllarda coğrafi keşiflerden sonra başlayan kolonyalist sürecin devamında merkezinde Almanya ve İngiltere arasında sömürge arayışı çerçevesinde ortaya çıkan çatışmaların olduğu dünya savaşları ortaya çıkmıştır. 1. Dünya savaşının akabinde belirginleşen belirsizlikler sonrası ortaya çıkan riskler, başta altın olmak üzere kıymetli madenler piyasasında fiyatlar üzerinde baskı oluşturmuştur.

Altın fiyatlarında meydana gelen artış sonrası 1929 Büyük Buhran krizinin başlamasıyla ülkeler zenginliklerini koruyabilme amacıyla iktisadi ve finansal varlıklarını altına dönüştürmüşlerdir. Altın talebinin artması sonucu başta gelişmiş ekonomiler olmak üzere ülkeler yerli paralarının konvertibilitelerini askıya almıştır. Bunun sonucu olarak altın ortak değişim aracı olma fonksiyonunu kaybetmeye başlamıştır. Daha sonra II. dünya savaşı ortaya çıkmış ve savaş iktisadi ekonomi politik çerçevesi işlemeye başlamıştır.

II. Dünya savaşının sonrası dünyanın yeniden iktisadi dengesine ulaşabilmesi için ortak bir para sisteminin tasarımı gerekliliği söz konusu olmuştur. Temmuz 1944'te ABD New Hampshire, Bretton Woods şehrinde uluslararası para sistemi konulu bir dizi konferans yapılmıştır. Toplantıların sonucunda Bretton Woods para sistemi kabul edilmiştir. Bu anlaşmaya göre ülkeler paralarını ABD dolarına bağlamışlardır. ABD doları ise uluslararası altın rezervlerine bağlanmıştır (Cameron ve Neal,2002:90).

Kurulan yeni sistem başlarda pozitif sonuçlar verse de, 1950' lerde ortaya çıkan Dolar sıkıntısı ile sistemde sorunlar baş göstermeye başlamıştır. 1960' larda dolar rezervlerinin altın stoklarını aşması sonucu ortaya çıkan spekülatif hareketler ve 70'lerde yaşanan petrol krizi ile, 1973 yılında ülkeler sabit kur üzerinden ulusal paralarını birbirleri paralarına bağlamış ve Bretton Woods sistemi sona ermiştir (Cameron ve Neal,2002:90).

İki dünya savaşının ardından küresel sürdürülebilir barış mekanizmalarını aktivasyon haline getirecek küresel ve uluslararası düzeyde kurumsal yapıların tasarımı gerekliliği ön plana çıkmıştır. Yeni küresel finansal mimarinin proto aşaması olarak BIS ve Bretton Woods para sisteminin yapılandırılması sonrası IMF ve Dünya Bankası kurulmuştur.

1970'lerin başında yaşanan küresel iktisadi ve finansal sorunlar yeni finansal mimarinin temel kurmay yapısı olan G8'in kuruluşuna zemin hazırlamıştır. 1975 yılında G8 kurulmuştur. Gelişmekte olan Latin Amerika ülkelerinde petrol şoklarının ve başarısız ithal ikamei politikalarının neden olduğu dış finansman açıkları Üçüncü Dünya Borç Krizini ortaya çıkarmıştır.

1980'li yıllarda küresel siyaset yeni bir düzleme kaymıştır. ABD başkanı Reagan ve Birleşik Krallık Başbakanı Thatcher'ın öncülük ettiği bu yeni siyaset tarzı "Yeni Sağ Politikalar" olarak isimlendirilmiştir. Bu politikaların iktisadi hayat ekonomi politik paradigma olarak izdüşümü arz yönlü iktisat olarak gerçekleşmiştir. Arz yönlü iktisatın finans dünyasına finans politik paradigma olarak izdüşümü finansal neoliberalizm olarak ortaya çıkmıştır.

Yeni gelişen bu ekonomi ve finans politik paradigma değişikliği ile artan finansal serbetleşme ve sınırı aşan sermaye hareketleriyle başta ABD olmak üzere gelişmiş ekonomiler üretim ekonomisinden mali ekonomiye geçmişlerdir. Mali ekonominin artan işlem tabanının piyasada dolaşımda olan likidite ile arasındaki negatif fark artmıştır. Zaten iki büyük küresel krizi ortaya çıkaran mekanizmanın özünde de bu husus yatmaktadır.

1929 krizi öz kaynak-hisse senedi piyasası, 2008 krizi ise borçlanma piyasalarındaki (Mortgage ve Eşik Altı Krediler) üzerindeki spekülatif baskılardan kaynaklanmıştır. Bir bakıma finansal ekonomi ve reel ekonomi arasında açılan negatif makas dünya ekonomisinin dönemine göre belirli bir eşik değerini aştığında küresel kriz ortaya çıkmaktadır. Bu durumu küresel krize giden süreç dinamiği olarak isimlendirebiliriz.

1990'lar finansal piyasalarda ortaya çıkan istikrarsızlık 1997 Asya finansal krizini tetiklemiştir. Küresel finansal sistem üzerinde artan riskler finansal mimaride revizyon ihtiyacına neden olmuştur. 1999 Köln G8 zirvesinde bu ihtiyaç resmîyet kazanmıştır. Devamında G8 ile birlikte yeni finansal mimarinin kurmay yapısını oluşturan G20 kurulmuştur.

2000'li yılların temel ekonomi politik döngüsü gelişmekte olan piyasa ekonomileri ve gelişen piyasalar arasındaki bağıntıyı aktivasyon haline sokan gelişmekte olan ülkelerde uygulamaya sokulan düşük kur-yüksek faiz politikası olmuştur. 2000'li yılların başında teknoloji şirketleri hisselerinde ortaya çıkan spekülasyon alımları sonucu dot.com krizi gerçekleşmiştir.

FED küresel sistem üzerinde artan durgunluk ve daralma riskini önlemek için sıfır faiz politikasına geçiş yapmıştır. Bunun sonucu olarak eşik altı kredisel taban artmıştır. 2005 yılı ile başlayan faiz artırımları sonucu sifıra yakınsanan faiz oranları-artan eşik altı kredisel taban mekanizması dinamiği bozulmaya başlamıştır. 2007 yılında ABD eşik altı krediler piyasasında başlayan kriz, 2008 Eylül ayında Lehman Brothers'ın iflası ile küresel finansal krize evrilmiştir. Küresel krizin neden olduğu durgunluk ve daralmayı önlemek için merkez bankaları faiz indirim ve niceliksel gevşeme politikaları uygulamaya başlamıştır.

2010'lu yıllar başlangıcında Euro Bölgesi güney ülkeleri borçlanma dinamiği küresel finansal krizin ortaya çıkardığı risk fiyatlamaları ve süregelen yapısal problemlerden dolayı bozulmuştur. İlk olarak Yunanistan'da başlayan kriz Yunanistan'la benzer dış borç dinamiği-yapısal sorunlar sistematığına sahip diğer güney ülkelerine yayılmıştır. Bir diğer önemli olay; 2014 yılında ise Rusya'nın Kırım'ı ilhakı sonrasında petrol fiyatlarında meydana gelen düşüştür.

2013 yılında gelişmiş ekonomilerde niceliksel gevşeme politikalarının kademeli olarak azaltılması, yükselen faiz artış beklentileri ve 2015 yılında başlayan faiz artışları; gelişmekte olan ekonomilerde artan faiz şokları üzerinden döviz kuru ve enflasyon şoklarına neden olmuştur. Bu şoklar finansal kırılmalıkları artırarak dış finansman ihtiyacını artırmıştır.

2016 yılında artan küresel jeopolitik riskler ve ABD'nin Trump'ın başkan seçilmesi öne çıkmıştır. Trump'ın seçilmesinin ardından ABD'nin ekonomi politik döngüsü finansal neoliberalizmden dış ticarete korumacılığı dönüşmüştür. 2017 yılında başlayan ABD-Çin ticaret savaşlarında ABD Çin'e karşı korumacı tedbirleri yürürlüğe koymuştur. Bir diğer yandan ABD 10 yıllık tahvil göstergelerinin 3'ün üzerine çıkmaya başlaması gelişmekte olan piyasalarda finansal kırılmalıkları artırarak döviz kuru ve dış finansman krizlerini tetiklemiştir. 2019 yılı sonunda ortaya çıkan Covid-19 pandemisi, ticaret savaşları, Çin'in büyüme hızının yavaşlaması, gelişmekte olan piyasa ekonomilerinde fiyatlanan riskler yeni bir küresel finansal kriz riskini ortaya çıkarmıştır. Bu bağlamda küresel finansal sistemde riskleri önleme ve dengeleme fonksiyonu olan yeni finansal mimarinin güncellenmesi gerekliliği ileri sürülebilir. Çünkü 2019-2020 ile yeni finansal mimarinin mevcut yapısı cari riskler karşısında yetersiz kalmıştır.

Tablo 1: Uluslararası Finansal Sistemin Gelişimi

DÖNEM	FİNANSAL PİYASALARI N ÖZELLİĞİ	PARA SİSTEMİ	SERMAYE AKIŞI	KRİZLER	FİNANSAL İŞ BİRLİĞİ	ULUSLARARASI FİNANSAL KURULUŞLAR	ARAÇLAR	FELSEFE	DÜZENLEME
1870-1914 Altın Devri	Küresel bir ayırım yok	Altın Standardı (Sabit, çapa İngiliz pound ve sterlini)	Serbest	Sık	İki tarafalı (İngiltere)	Yok, (İngiltee Bankası)	Kapsamlı Bonolar Telgraf, Buharlı Tren	Merkantilizm	Kendini Düzenleme
1914-1944 Savaş Arası	Ulusal/Bölünmüş	Yok	Kısıtlanmış	Sürekli Büyük Buhran	İngiltere/ABD	BIS	Yok	Korumacılık, Devletçilik	Devlet Kısıtlamaları; örn.ABD
1944-1973 Bretton Woods	Ulusal Offshore	Bretton Woods (Sabit, çapa ABD doları)	Sınırlı, cari hesap	Seyrek	Bretton Woods (ABD merkez ve Basel Komitesi)	Bretton Woods Paris Kulübü Marshal Planı	Euro Piyasalar	Kapitalizm, Komünizm	Devlet Kontrolü
1973-1982 Petrol Krizleri	Uluslararası Yerli	Dalgalandan	Sınırlı, cari hesap	Petrol Şokları	G10	AB, Basel komitesi, Yöresel Kalkınma Bankaları	Petrodolar	Devlet İdare portföy teorisi	Hükümet Müdah. Ulus. İşbirliği Basel uyumu
1982-1993 Ultra.Fin.Piyas.	Uluslararası (Toptan Satış, Yerli Perakende)	Kontrol Edilen Kur	Sınırlı Sermaye Hesabı OECD	Borç Krizleri, Sovyet Çöküşü	G5/G8	AET, ABD dokunulmazlığı	Özelleştirme Bilgisayar Hava Gezileri	Liberalizm ve Piyasa Mekanizması	Basel I ve Deregelasyon

1993- Küresel Fin.Piys	Küresel (Toptan Satış, Yerli Perakende)	İmkânsız Üçleme	Genellikle Serbest	Küresel Kriz, Gelişmemiş piyasa Krizleri Euro Bölgesi Borç Krizleri	NİFA WTO G8	EBDR, EU, WTO, UFKLAR Uluslararası Fin İstikrar Forumu	Türevler Sermaye Akımları İnternet	Washington Uzlaşması	Risk bazlı Düzenleme Basel II
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Kaynak: ARNER W. Douglas, Financial Stability, Economic Growth and the Role of Law, New York, Cambridge University Press, 2007, s.66

Tabloda yeni küresel finansal mimariye uzanan süreçte temel belirleyici unsurlardan biri olan uluslararası finansal sistemin gelişimi dönemler itibarıyla özetlenmiştir. Bu dönemler en baştan sırasıyla; altın devri, savaşlar arası dönem, Bretton Woods dönemi, petrol krizleri dönemi, uluslararası finansal piyasalar ve küresel finansal piyasalar dönemi olarak ifade edilmiştir. Devamında ise küresel politika belirsizliklerinin küresel finansal sistemde yaptığı etkileri inceleyen seçilmiş literatür özetlenmiştir.

2. LİTERATÜR TARAMASI

Yapılan çalışmalarda ağırlıklı olarak varyans ayrıştırması ve nedensellik analizleri kullanılmıştır. Küresel politika belirsizliklerinin etkilerini ilişkin literatür Küresel, ABD, AB, İngiltere, Kanada, Çin ve gelişmekte olan piyasa ekonomileri kapsamında gelişmiştir. Küresel politika belirsizlikleri reel kesim üzerinde ar ve talep kanalı üzerinden etkili olarak yatırımları ve ticareti olumsuz etkilerken artan volatilité kanalı ile para ve sermaye piyasalarında finansal istikrarı olumsuz etkilemektedir. Küresel politika belirsizliklerinin 2/3'ünün tüm küresel sisteme yayıldığı gelişmekte olan piyasa ekonomilerinin ABD ve Çin kaynaklı bu belirsizliklerden daha fazla olumsuz etkilendiği gözlemlenmiştir.

Paccès (2010)'a göre finansal krizlere neden olan belirsizliklerin temelinde kredi notları, sermaye yeterliliği ve kurumsal yönetim düzeyi yatmaktadır. Bir diğer yönden bu belirsizlikler farklı ülke ve ülke grupları açısından farklı şekilde etki edebilmektedirler (Benati, 2014). Belirsizliklerin Türkiye gibi gelişmekte olan piyasa ekonomilerinde etki edebilmesi ve FED'in sözlü para politikası yönlendirmeleri ile yakından ilişkilidir (Erdoğan ve Hülügü, 2014). Tonzer (2014)' e göre OECD ülkelerinde bankalar üzerinde etkiler incelendiğinde öz sermayesi güçlü ve likiditesi yüksek bankaların belirsizliklerden daha az etkilendiği görülmektedir. Bir diğer yandan brexit gibi önemli kilometre taşı politik olayların ortaya çıkardığı finansal istikrarsızlık reel sektöre de yansımaktadır (Belkde vd, 2016). Yine 2010'lu dönemlerde küresel politika belirsizliklerinin en yüksek büyüme hızına sahip olan Çin ekonomisinde de etkili olduğu gözlemlenmektedir (Dai vd,2017). Ayrıca Biljanovska, Vd, (2017)' ne göre Çinle birlikte AB ve ABD deki politika belirsizlikleri tüm dünyadaki ekonomik aktiviteleri olumsuz etkilemektedir. Bu belirsizlikler finansal piyasalardaki varlık fiyatları üzerindeki volatilitéyi artırmaktadır (Visco, 2017) ve (Dai vd.,:2019) . Bu doğrultuda finansal piyasalarda risk iştahı artmıştır (Baum vd.,2018). Bir diğer yandan ABD'de ortaya çıkan ekonomi politikaları belirsizlikleri ticaret ortakları kanalı ile yayılmaktadır (Hassan vd., 2018). Ve bu belirsizlikler dış ticareti ve doğrudan yatırımı olumsuz etkilemektedir (Krol, 2018). Ayrıca ABD 'de ticaret politikasına ilişkin ortaya çıkan belirsizlikler hem ifirma düzeyinde hemde makroekonomik düzlemde yatırımları olumsuz etkilemektedir.(Caldara vd, 2019) Fontaine vd.,(2018)'e göre Çin'in de gelişmekte olan bir ekonomi olması sebebiyle Çin'de ekonomi politikalarına ilişkin ortaya çıkan belirsizlikler, gelişmekte olan ekonomileri daha şiddetli bir şekilde olumsuz etkilemektedir. Yunanistan gibi lokal ekonomilerde meydana gelen krizler üzerinde küresel krizin ortaya çıkardığı belirsizlikler daha etkili olmuştur (Hardouveliso vd. 2018).

Tablo 2: Literatür Taraması

Yazar	Yöntem	Kapsam	Frekans	Dönem	Bulgu
(Paccès, 2010)	Teorik				Finansal krizlere neden olan belirsizlikleri, kredi derecelendirme kuruluşlarının düzenlemeleri, sermaye yeterliliği ve bankaların kurumsal yönetim seviyeleri belirlemektedir.
(Benati, 2014)	Bayesiyen Yapısal Var	ABD, İngiltere, Kanada, Euro Bölgesi	Aylık	1930-1940	Politika belirsizliklerinin etkileri, Kanada ve Birleşik Krallık için benzer Euro Bölgesi için biraz farklı, ABD için ise daha farklı sonuçlar elde edilmiştir. Ayrıca Bu sonuçlar istatistiksel olarak anlamlıdır.
(Erdoğan ve Hülügü, 2014)	Varyans Ayrıştırması	Türkiye	Aylık	2013-2014	Mayıs 2013'te FED'in tahvil alımını azaltacağını ilanı ve politik kargaşa dönemi belirsizlik seviyesi yüksektir.
(Tonzer vd, 2014)	Yatay Kesit	OECD	Aylık	1998-2012	Yüksek belirsizlik bankaların borç vermesini olumsuz etkilemekte. Öz sermayesi güçlü ve likiditesi yüksek bankalar belirsizliklerden daha az etkilenmektedir. Ayrıca yabancıların sahibi olan bankalar diğer bankalara nazaran belirsizlikten etkilenmemektedir.

(Belke vd. 2016)	Varyans Ayırıştırması	Birleşik krallık ve Euro Bölgesi	Aylık	2000-2016	Brexit'in neden olduğu politika belirsizlikleri orta vadede reel sektörde etkileyen finansal istikrarsızlığa neden olmaktadır.
(Dai vd.2017)	Kantile Granger Nedensellik	Çin	Aylık	2006-2017	Kuyruklu kantil aralığında nedensellik daha güçlüdür.
(Biljanovska, Vd, 2017)	Panel VAR	ABD, Çin, AB	Aylık	1997-2017	Ekonomi politikalarını belirsizliklerinin ortaya çıkardığı olumsuz etkinin 2/3'ü yayılmaktadır. Ayrıca ABD, Çin ve AB'deki belirsizlikler batı dünyası ve Avrupa başta olmak üzere tüm dünyada ekonomik aktiviteleri olumsuz etkilemektedir.
(Visco, 2017)	Teorik				Küresel ekonomik belirsizlikler volatilitayı artırmaktadır.
(Kang vd., 2017)	Favar	Küresel Ekonomi	Aylık	1981-2014	Küresel belirsizlik şokları küresel büyüme, enflasyon ve faiz oranları üzerinde ABD'nin belirsizlik şoklarından daha fazla olumsuz etkiye sahiptir.
(Hassan vd., 2018)	ARDL ve Nedensellik	ABD, Çin, Kanada, Almanya, Birleşik Krallık, Japonya	Aylık	1989-2016	Ekonomi politikaları belirsizliği ABD'nin ticaret ortakları ile ticaretin hem arz hem de talep yönü ile etkilemektedir. Artan belirsizlik aşırı tüketimi ve kar marjlarını azaltmaktadır.
(Fontaine vd.,2018)	Stvar	Çin ve Küresel Ekonomi	Aylık	1995-2016	Çin'deki ekonomi politikası belirsizlikleri gelişmiş ülkelerde kriz dönemleri hariç etkili olmamakta. Kriz dönemlerinde endüstri üretimi ve ticaret yavaşlamakta ve işsizlik ortaya çıkmaktadır. Gelişmekte olan ülkeler ise Çin'deki belirsizliklerden daha sert bir şekilde etkilenmektedir.
(Krol, 2018)	Var	ABD	Çeyrek	1986-2017	Ekonomi politikaları belirsizliği dış ticaret ve doğrudan yabancı yatırımları olumsuz etkilemektedir.
(Hardouveli so vd. 2018)	Korelasyon	Yunanistan	Aylık Ve Çeyreklik	1998-2017	Yunanistan ekonomi belirsizlik endeksi ve uluslararası ekonomi politikaları belirsizlik endeksi arasındaki korelasyon küresel kriz döneminde çok yüksek ancak Yunanistan krizi sonrası azalma eğilimindedir.
(Baum vd.2018)	Ekk	Küresel Ekonomi	Aylık	1996-2015	Belirsizlikler finans sektöründe özel sektör kredileri, bankaların etkinliğini ve operasyonel performansını, sektörel istikrarı olumsuz etkilemektedir. Risk iştahını artırarak kredi riskini artırmaktadır.
(Dai vd.2019)	Önemli Bileşenler Analizi	Küresel	Aylık	2003-2018	Önemli bileşenler analizi temelli belirsizlik endeksi ve volatilitate arasındaki korelasyon daha anlamlı.
(Caldara vd, 2019)	Var	ABD	Aylık	1960-2018	Ticaret politikası belirsizlikleri hem firma hem de makroekonomik düzlemde yatırımları azaltmaktadır.

3. YENİ KÜRESEL FİNANSAL MİMARİ

II. Dünya savaşı sonunda kurulan küresel sistemin en önemli unsurlarından biri küresel finansal sistem olmuştur. Küresel finansal sistemin tasarımı ile gelişmekte olan ülkelerin büyüme sağlayacak yatırımlarını finanse edecek kaynakları tasarruf fazlası olan gelişmiş ülkelerden elde etmesi amaçlanmıştır. Bununla birlikte Fon eksikliği olanların kaynak, fon fazlası olanların sermaye kazancı sağlayarak küresel finansal sistemin devamlılığı ve gelişimini amaçlayan bu mekanizma günümüze uzanan süreçte finansal sistem üzerinde politika belirsizliklerinin neden olduğu birçok risk ortaya çıkmıştır

Küresel politik düzen ve finansal sistemde karar alıcıları küresel finansal sistemi belirsizlik ve risklere karşı koruyabilmek için, bir takım kurumsal yapılar ve kurallar geliştirmiştir. İlk kez 1999 Köln G8 zirvesinde kullanılan yeni finansal mimari kavramı; küresel finansal sistemde ortaya çıkan risklere karşı geliştirilen tüm kurumsal yapılar, politika ve kurallar bütünüdür ifade etmektedir. Bir bakıma küresel finansal sistemin devamlılığına ve gelişimine ilişkin yapılan tüm eylemler yeni finansal mimariyi ifade etmektedir.

İkinci dünya savaşı sonrasında kurulan küresel ekonomi politik düzen 1990'lı yılların sonuna dek birçok meydan okuma ile sarsılmıştır. Bu on yıllarda 1950'ler doların arz sıkıntısı, 1960'lar dolar stoklarının altın rezervlerini aşması sonucu ortaya çıkan spekülasyon hareketleri, 1970'ler petrol şokları, 1980'ler finansal serbestleşmenin sonucu olan Neo-Keynesyen ve Neo-Liberal politikadaki uyumsuzluğun getirdiği sistemik riskler ve 1990'lar sonunda ortaya çıkan finansal krizler ile süregelmiştir. Bu nedenle küresel ekonomi politik yönetimin kurumsal düzeyinde krizlerin tekrarlanma olasılığını, maliyetlerini ve yıkıcı etkilerini azaltmak ve krizleri öngermeye yönelik çözüm politikaları arayışı başlamıştır. Bu doğrultuda; piyasalara ilişkin

düzenleme, denetim ve bilginin geliştirilmesi fonksiyonları kullanılarak, finansal koşullardaki oynaklığı gidermek, ulusal düzeydeki riskleri dağıtmak, sermaye akımlarının aniden durmasını engellemek ve istikrarlı büyüme ile uyumlu büyük çaplı sermaye akımlarını desteklemek için uluslararası küresel bir çerçeve geliştirilmiştir. Küresel ölçekte uluslararası finansal sistemin istikrarını ve etkinliğini artırmaya yönelik geliştirilen bu çerçevenin uygulanmasında ulusal güçlerin yetersiz kalması sonucu bu çerçeve politikaları yapılandırılacak, izleyecek ve denetleyecek uluslar üstü bir kurum yapısının varlığı zorunlu olmuştur. Bu zorunluluk ilkesi gereği 1999'da G8 ülkeleri mekanizması temel kurum yapı olarak ortaya çıkmıştır. G8 mekanizması; küreselleşen finansal sistemin gelişim evrelerini destekleyen, uluslararası kuruluşların etkin bir biçimde yönetimini sağlamaya yönelik kurallı ve sistematik bir küresel finansal piyasa yolunu açan bakış açılarının bütününe işlevsel bir şekilde kullanarak küresel ekonomi yönetimini kurumsal düzeyde yapılandırmaya yönelik tüm faaliyetleri içeren "Yeni Küresel Finansal Mimari" taslağını hazırlamışlardır.

Tablo 3: Yeni Finansal Mimari Tanımları

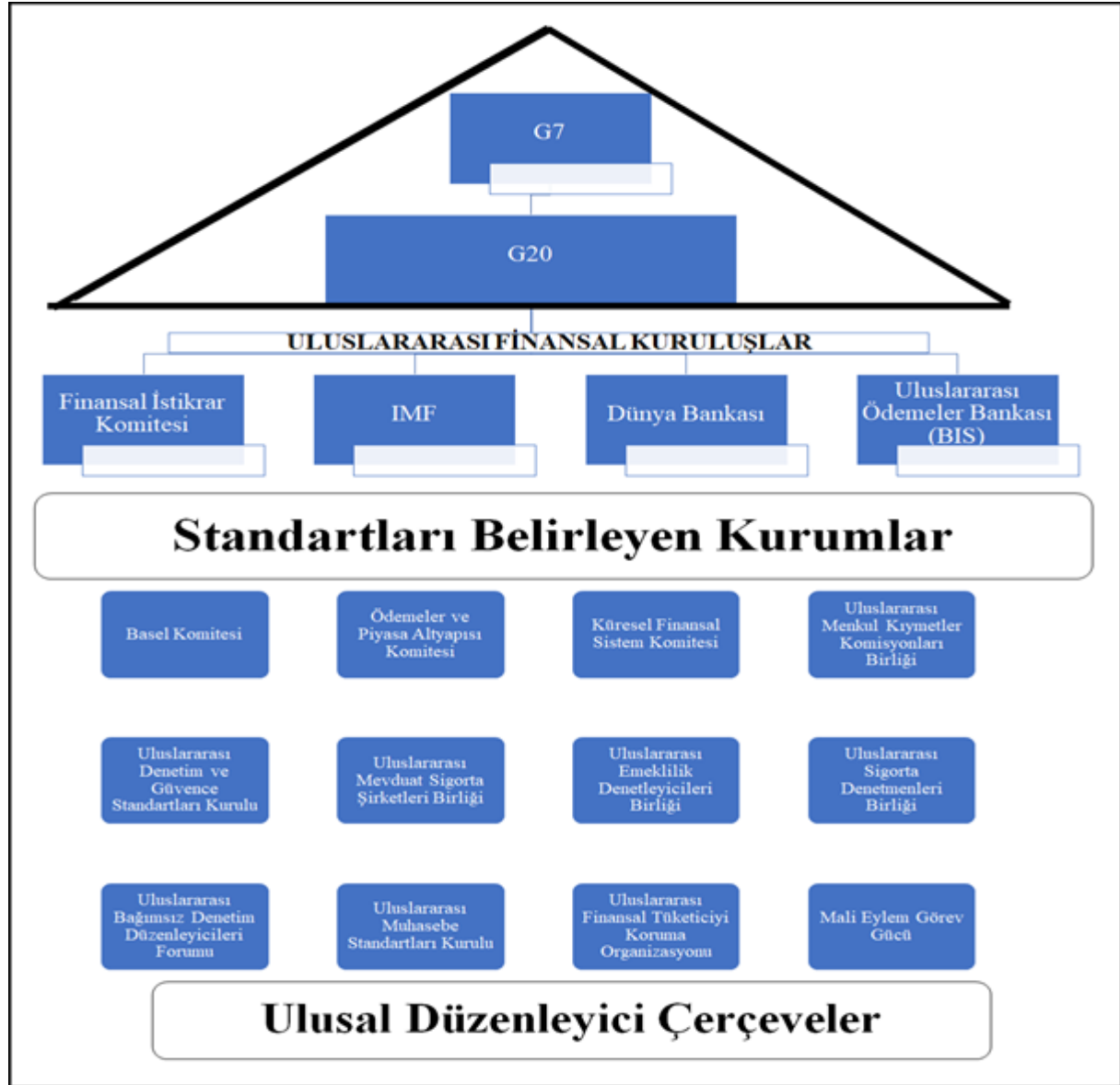
İktisat Yazını	Yeni Finansal Mimari Tanımları
Griffith-Jones (1999)	Küreselleşen finansal sistemin gelişme sürecini destekleyen, uluslararası kuruluşların etkin bir biçimde yönetimini sağlamaya yönelik, kurallı/sistemli bir küresel finansal piyasa yolunu açan bakış açılarının bütünüdür.
Eichengreen (1999)	Kurumların, yapıların ve politikaların krizleri öngörme, engelleme ve ortadan kaldırma şeklinde yapılandırılmasıdır.
Helleiner (2000)	Düzenleme, denetim ve bilginin geliştirilmesi, gerektiğinde finans koşullarının büyük ölçüde artırılması girişimleridir.
Akyüz (2000)	Küresel ve sistemik istikrarsızlık, ulusal güçlerin sorun çözme konusundaki yetersizlikleri ve küresel finansal sistemin yeniden yapılandırılması konusundaki görüş birliğidir.
Bingham (2000)	Uluslararası finansal sistemin istikrarını ve etkinliğini artırmaya yönelik düzenlemeler setidir.
Fanelli ve Medhora (2001)	Finansal koşullardaki oynaklığı gidermek, ulusal düzeydeki riskleri dağıtmak, sermaye akımlarının aniden durmasını engellemek ve istikrarlı büyüme ile uyumlu büyük çaplı sermaye akımlarını desteklemek için oluşturulan çerçevedir.
Haldane ve Kruger (2001)	1990'lı yıllarda yükselen piyasa ekonomilerinde finansal krizlerin ortaya çıkış sıklığının artmasıyla, hükümetler ve uluslararası kuruluşların krizlerin neden olduğu tehlikelerin azaltılması amacıyla yaptıkları müzakerelerdir.
Soederberg (2002)	G-7 ülkelerinin uluslararası finansal sistemin güçlendirilmesine yönelik kurduğu bir dizi kurum ve iletişim aracı önderliğinde izlenen stratejidir
Kenen (2002)	Krizlerin sık tekrarlanma olasılığını azaltmaya yönelik krizden korunma politikaları ve krizlerin maliyetini azaltmaya yönelik krize çözüm politikalarıdır.
Cartapanis ve Herland (2002)	Neo-Keynesyen ve Neo-liberal ilkeleri biraraya getiren ancak sistemik risk sorununa bütünüyle cevap bulamamış uzlaşma çalışmalarıdır.
Davidson (2004)	1970'li yıllardakine benzer şekilde devam eden uluslararası finansal krizlerin yıkıcı etkilerinden tüm ülkeleri korumak ve para sistemi üzerindeki kalıcı küresel depresyon baskılarını ortadan kaldırmak, böylece potansiyel küresel tam istihdamın gerçekleştirilme olasılığına katkıda bulunmaktadır.
Rana (2010)	Küresel ekonomi yönetiminin kurumsal düzeyde yapılandırılmasıdır.
Shinasi ve Truman (2010)	Uluslararası para sisteminin resmi uzlaşma, anlaşma, toplantı ve kuruluşlarını kapsayan, bunun yanında özel finansal faaliyetlerle ilgili resmi ve özel toplantıları, anlaşmaları içeren bir yapıdır.
Elson (2010)	Parasal ve finansal sistemin uluslararası düzeyde etkin biçimde işleyişini sağlamaya yönelik ortak düzenlemelerin yönetimini kapsamaktadır.

Kaynak: Varlık Binicioğulları, 2014

Yeni finansal mimarinin temel karar alıcı mekanizmaları G7 ve G20'dir. Kurumsal yapı 3 ana mekanizmadan oluşmaktadır. Bunlar; uluslararası finansal kuruluşlar, standartları belirleyen kurumlar ve ulusal düzeyde düzenleyici çerçeve yapılarıdır. Uluslararası finansal kuruluşlar; finansal istikrar komitesi, IMF, Dünya Bankası, Uluslararası Ödemeler Bankası (BIS) olarak

sıralanabilir. Standartları belirleyen kurumların birlikler ve komiteler katmanında; Basel komitesi, ödemeler ve piyasa altyapısı komitesi, küresel finansal sistem komitesi, uluslararası menkul kıymetler komisyonları, uluslararası sigorta, uluslararası emeklilik denetleyicileri, uluslararası mevduat sigorta şirketleri birlikleri yer almaktadır. Uluslararası denetim ve güvence standartları kurulu, uluslararası bağımsız denetim düzenleyicileri forumu, uluslararası muhasebe standartları kurulu, uluslararası finansal tüketiciyi koruma organizasyonu, mali eylem görev gücü ise standartları belirleyen kurumların diğer katmanında bulunmaktadır.

Şekil 1: Yeni Küresel Finansal Mimari



Kaynak: <http://financialmarketsjournal.co.za/oldsite/11thedition/printedarticles/internationalreforms.htm>, 'den geliştirilmiştir.

Yeni finansal mimari dengeleme, koordine etme, izleme ve etkinlik fonksiyonları ile küresel finansal sistemin devamlılığı ve amaçsal bütünlüğünü kriz ve katastrofi durumlarına karşı korumaktadır. Günümüze gelen süreçte yeni finansal mimarinin revize edilmesi gerekliliği ileri sürülebilir. Çünkü ticaret savaşları sonrası düşen iktisadi ve finansal serbestlik finansal karların maksimizasyonunu olumsuz etkilemekte, artan küresel belirsizlikler ve jeopolitik riskler sistemin varlığını tehlikeye atmaktadır.

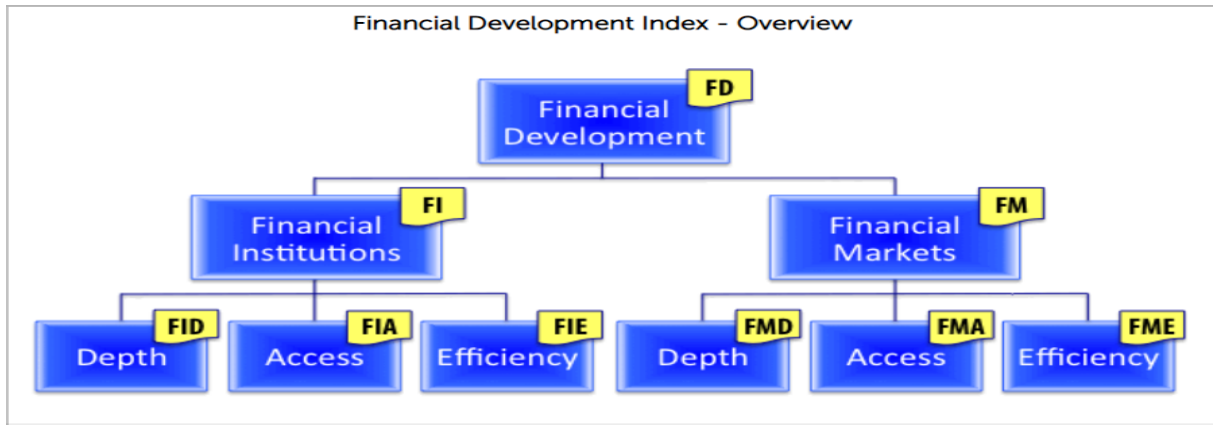
Şekil 2: Yeni Finansal Mimarinin Küresel Finansal Sistem İçerisindeki Rolü



3. MODEL VE VERİ SETİ

Araştırmada 5 adet değişken kullanılmıştır. Bağımlı değişken küresel finansal sistem gelişim endeksi, küresel jeopolitik risk endeksi, küresel ekonomi politikaları belirsizlik endeksi, dünya belirsizlik endeksi ve dünya ticaret politikaları belirsizlik endeksi bağımsız değişkenler olarak seçilmiştir. Çalışmanın bağımlı değişkeni olan küresel finansal gelişim endeksi finansal piyasalar ve finansal kurumlar alt endeksleri toplamından oluşmaktadır. Bu endekslerin alt endeksleri de derinlik, erişim ve etkinlik endeksleridir. Bir diğer yönden aylık frekansa gözlemlenemeyen tüm değişkenler Tramo Seat yöntemi kullanılarak aylık frekansa enterpole edilmiştir.

Şekil 3: Küresel Finansal Gelişim Endeksi Bileşenler



Kaynak: <https://data.imf.org/?sk=F8032E80-B36C-43B1-AC26-493C5B1CD33B> (tam referans verilmeli)

Tablo 4: Veri Seti

DEĞİŞKEN	KOD	FREKANS	GÖZLEM ARALIĞI	DÖNÜŞÜM (1999.01=100)	VERİ KAYNAĞI
Kür. Fin. Gelış Endeksi	GFD	YILLIK	1999.01-2019.09	ENTERPOLASYON-AYLIK, 1999.01=100	https://data.imf.org/?sk=F8032E80-B36C-43B1-AC26-493C5B1CD33B
Küresel Jeopolitik Risk Endeksi	GPR	AYLIK	1999.01-2019.09	1999.01=100	https://www.policyuncertainty.com/gpr.html
Küresel Ekon. Pol. Belirsizlik Endeksi	GEPU	AYLIK	1999.01-2019.09	1999.01=100	https://www.policyuncertainty.com/global_monthly.html
Dünya Belirsizlik Endeksi	WUI	ÇEYREK	1999.01-2019.09	ENTERPOLASYON-AYLIK, 1999.01=100	https://worlduncertaintyindex.com/data/
Dünya Ticaret Politikaları belirsizliđi Endeksi	WTUI	ÇEYREK	1999.01-2019.09	ENTERPOLASYON-AYLIK, 1999.01=100	https://worlduncertaintyindex.com/data/

Arařtırmada küresel finansal gelişim endeksinin açıklayan deđişkenlerin zaman göre deđişen dinamik katsayılarının hesaplanması ve yorumlanması amaçlanmıştır. Bu nedenle arařtırmada metodolojik olarak Kalman-Filtreleme yöntemi seçilmiştir.

Lineer bir durum-uzay denkleminde gözlem ve durum denklemi olmak üzere iki tür denklem vardır. (1) ve (2) numaralı denklemler sırasıyla gözlem ve durum denklemlerini göstermektedir.

$$A. y_t = Z\alpha_t + Dw_t + \varepsilon_t$$

$$B. \alpha_t = T\alpha_{t-1} + Cw_t + v_t$$

Denklem A ve B 'de α_t ; t zamanında $m \times 1$ boyutlu gözlenemeyen durum vektörünü T: $m \times m$ boyutlu bilindiđi kabul edilen matrisi, C: $m \times k$ boyutlu katsayı matrisini, w_t : t zamanında $k \times 1$ boyutlu dışsal deđişkenler vektörünü, ε_t ve v_t ise sıfır ortalamalı Gaussyan dağılımlı vektörleri ifade etmektedir. y_t : t zamanında $N \times 1$ boyutlu gözlem vektörünü, Z: $N \times m$ boyutlu y_t vektörü ile durum vektörünü ilişkilendiren matrisi, D: $N \times k$ boyutlu katsayı matrisini ifade etmektedir. Ayrıca, m ve k sırasıyla durum deđişkenlerinin ve bağımsız deđişkenlerin sayısını ifade etmektedir. (Harvey, 1990).

4. AMPİRİK BULGULAR

Kalman filtreleme yöntemine geçiş yapabilmek için ilk olarak Augmented Dickey Fuller birim kök testleri yapılmıştır. Elde edilen sonuçlara göre tüm deđişkenler aynı mertebede birinci farklarında durađanlaşmaktadır (Bkz. Tablo 5).

İlk olarak 1999 1. ayı 100 deđerini ifade edecek şekilde deđişkenlerin normalize deđerleri hesaplanmıştır (Bkz şekil 4). Kalman filtresi sonuçları kapsamında hesaplanan katsayılar deđişkenlerin gerçek deđerlerinin zaman içerisinde artan veya azalan dönemleri kapsamında incelenebilir. Küresel finansal gelişim endeksinde 2001, 2008, 2012-2013 ve 2016 sonrası azalış gözlemlenmektedir. Buna göre deđişkenlere ilişkin parametreleri tek tek açıklamamız gerekirse (Bkz.Şekil 5).

Jeopolitik risk endeksinin en yüksek olduđu 2001 azalış döneminde katsayısının negatif olduđu gözlemlenmiştir. Ayrıca jeopolitik risklerin azaldığı dönemlerde katsayılar pozitif olarak gerçekleşmiştir. Buradan hareketle küresel jeopolitik belirsizliklerin belli bir deđere kadar risk-getiri ilişkisi bağlamında pozitif etki yaptıđı maksimum deđerlerinde ise finansal gelişimi olumsuz etkilediđi ifade edilebilir. Dünya belirsizlik endeksinin etkileri yine jeopolitik risk endeksinin etkilerine paralel bir şekilde gerçekleşmiştir(Bkz.Şekil 5).

Küresel ekonomi politikaları belirsizlik endeksinin yine jeopolitik risklerde olduđu gibi maksimum seviyelerde gerçekleşmesi finansal gelişimi olumsuz etkilemiştir. Dünya belirsizlik endeksi de yine maksimum olduđu dönemlerde finansal gelişmeyi negatif etkilemiştir(Bkz.Şekil 5).

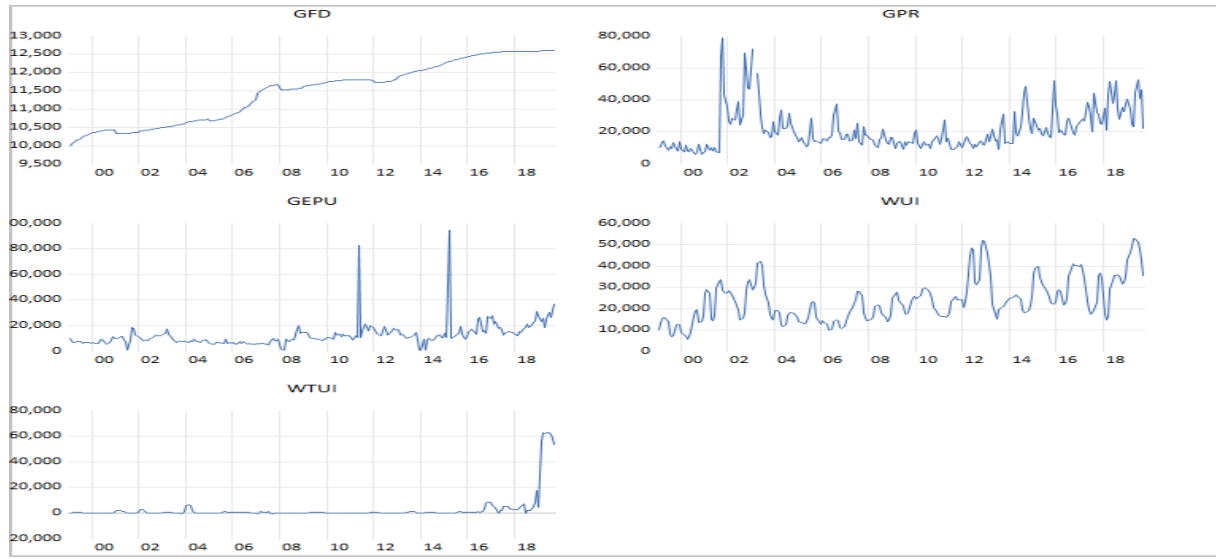
Dünya ticaret politikaları belirsizlik endeksi birçok dönem boyunca finansal gelişmeyi olumsuz etkilemiştir. Jeopolitik ve iktisadi belirsizliklerin düşük olduđu dönemde ticaret belirsizliđi endeksi negatif etkilemiştir. Ticaret savaşlarının başladıđı 2017 yılından sonra artan belirsizlik ticaret politikaları belirsizlik endeksinin katsayısını tekrar negatife doğru yönlendirmiştir. Bu

dönemden sonra finansal gelişim endeksinin ticaret politikalarındaki çok yüksek derecedeki belirsizliği nedeniyle durağanlaştığı ifade edilebilir (Bkz.Şekil 5).

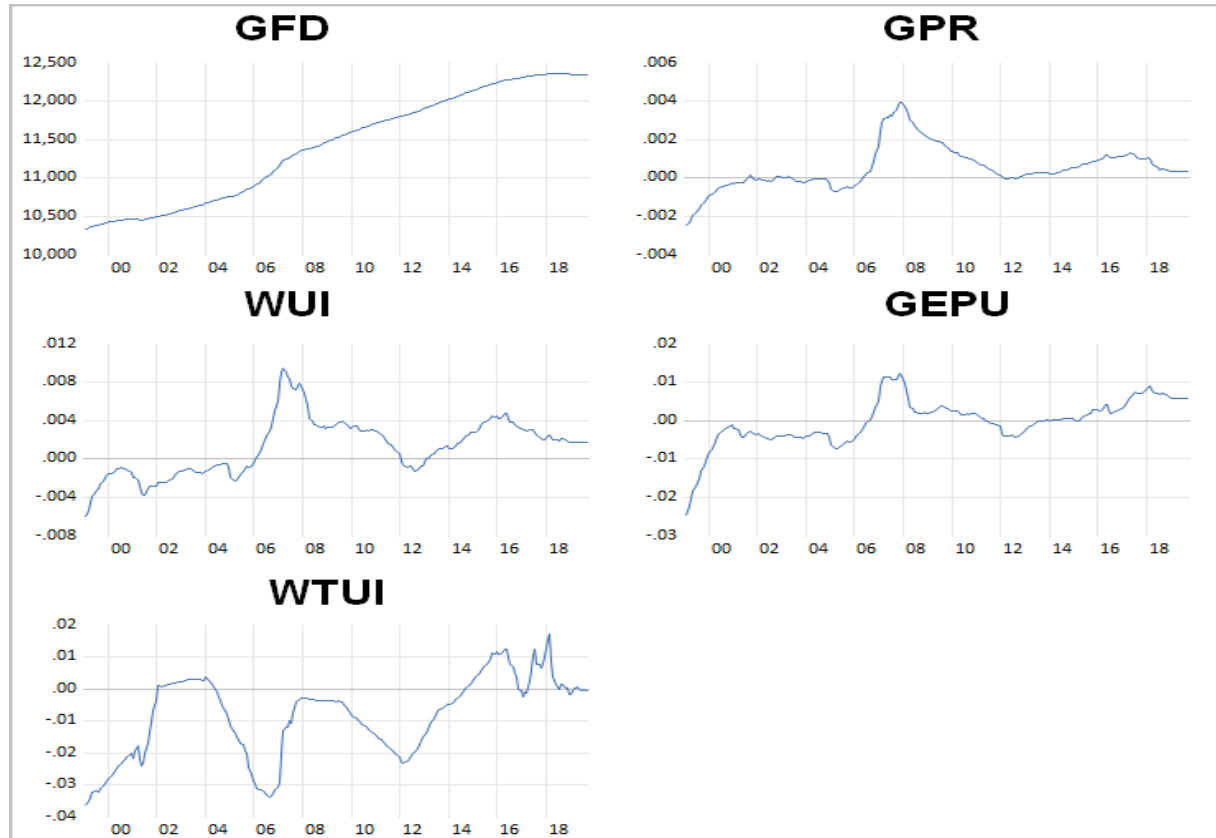
Tablo 5: Augmented Dickey Fuller Birim Kök Test Sonuçları

Null Hypothesis: Unit root (individual unit root process)				
Series: GFD, GEPU, GPR, WUI, WTUI				
Date: 08/31/20 Time: 18:44				
Sample: 1999M01 2019M09				
Exogenous variables: Individual effects				
Automatic selection of maximum lags				
Automatic lag length selection based on AIC: 5 to 15				
Total number of observations: 1168				
Cross-sections included: 5				
Method			Statistic	Prob.**
ADF - Fisher Chi-square			8.86751	0.5447
ADF - Choi Z-stat			1.43296	0.9241
** Probabilities for Fisher tests are computed using an asymptotic Chi				
-square distribution. All other tests assume asymptotic normality.				
Intermediate ADF test results UNTITLED				
Series	Prob.	Lag	Max Lag	Obs
GFD	0.8398	14	15	234
GEPU	0.1328	5	15	243
GPR	0.9381	10	14	225
WUI	0.1136	15	15	233
WTUI	0.9986	15	15	233
Null Hypothesis: Unit root (individual unit root process)				
Series: GFD, GEPU, GPR, WUI, WTUI				
Date: 08/31/20 Time: 18:44				
Sample: 1999M01 2019M09				
Exogenous variables: Individual effects				
Automatic selection of maximum lags				
Automatic lag length selection based on AIC: 4 to 15				
Total number of observations: 1167				
Cross-sections included: 5				
Method			Statistic	Prob.**
ADF - Fisher Chi-square			197.010	0.0000
ADF - Choi Z-stat			-11.8531	0.0000
** Probabilities for Fisher tests are computed using an asymptotic Chi				
-square distribution. All other tests assume asymptotic normality.				
Intermediate ADF test results D(UNTITLED)				
Series	Prob.	Lag	Max Lag	Obs
D(GFD)	0.0019	13	15	234
D(GEPU)	0.0000	4	15	243
D(GPR)	0.0000	9	14	225
D(WUI)	0.0000	14	15	233
D(WTUI)	0.0047	15	15	232

Şekil 4: Değişkenlerin Normalize Değerleri, (1990=100)



Şekil 5: Kalman Filtresi Tahmin Sonuçları



Küresel finansal gelişim endeksinin yukarı yönlü hareketleri döneminde ekonomi politikaları belirsizliklerin arttığı görülmektedir. Risk-getiri arasındaki doğrusallığa paralel bir şekilde ekonomi politikalarında artan belirsizlikler artan finansal getiriler üzerinden finansal gelişimi olumlu etkilemiştir. Bir diğer önemli nokta; ticaret savaşları sonrası süreçte başlayan korumacı tedbirler sonrası ekonomi politikalarında belirsizlik endeksinin etkisi azalmış, ticaret politikaları belirsizliğin görece

açıklama yüzdesi artmış ve finansal gelişim yavaşlamıştır. Bunun nedeni, finansal getirilerin; risk ve iktisadi serbestlik ile doğru, ticari risklerin ve serbestliğin ise birbirleri ile ters orantılı olmasıdır. Ticaret savaşları ve korumacılık sonrası belirsizliklerin ve iktisadi serbestliğin birlikte azalması toplam finansal gelişimi olumsuz etkilemiştir.

5. SONUÇ VE TARTIŞMA

Modern küresel finansal sistemin ilk belirtileri Avrupa da ortaçağdan bu yana süregelen savaşların altın ticareti ile finanse edilmeye başlanmasında görülmüş, temelleri 1700'lerde kâğıt paranın sirküle edilmesi temelli finans ekolünün kurumsallaşmaya başlaması ile atılmıştır. Bu çerçevede günümüze gelen süreçte kıymetli madenlerin ve petrol benzeri hidro karbon enerji rezervlerinin bulunması ve işlenmesi ile iktisadi değer mekanizmasının kapsamı genişlemiştir. Bu bağlamda kreditorler kâğıt parayı krediler üzerinden sirküle ederek küresel parasal taban ve likidite hacmini artırmışlardır. Bu şekilde küresel finansal sistem 1945'lere kadar gelişerek devam etmiştir.

Ancak dünyanın iktisadi değer tabanının genişlemesi; ülkeler ve firmalar arasında paylaşım sorunları ortaya çıkarmıştır. Küresel finansal sistem 1945'lere gelene kadar iki dünya savaşı ve 1929 küresel krizi ile karşılaşmıştır. Bretton Woods sisteminin çöküşü ve 1970lerdeki petrol krizleri, küresel finansal sistemin sistemik riskini artırmıştır. Bir diğer yönden dünyada iktisadi ve finansal işlemlerin hacmi, çeşitliliği ve küresel düzeyde artan iktisadi ve finansal ilişkiler ağı küresel finansal sistemin yönetimini ve idaresini zorlaştırmıştır. Bu çerçevede soğuk savaş dönemi sonrasında küresel düzeyde artan jeopolitik riskler, 1997 Asya finansal krizi ile artan iktisadi ve finansal riskler ile birleşince küresel finansal sistemin risklere karşı savunma mekanizmasını yeniden organizasyonu ve yapılandırılması ihtiyacı ortaya çıkmıştır. Bu çerçevede 1999 Köln G8 zirvesi ile bu ihtiyaç resmileşerek yeni küresel finansal mimari yapılandırılmıştır. Buna göre küresel finansal sistem üzerindeki tüm risklerin önlenmesi amacıyla yapılan tüm eylemler yeni küresel finansal mimari kavramını kapsamaktadır.

Yeni küresel finansal mimarinin gelişimi 1999'dan günümüze uzanan süreçte ilerlemesine rağmen bazı dönemlerde daralmış, büyüme ivmesi azalmış ve son yıllarda ise durağanlaşmıştır. Çünkü bu dönemde birçok ekonomik ve finansal kriz ortaya çıkmıştır, Bu krizler dot.com krizi, 2007 eşik altı krizi, 2008 küresel finansal kriz, 2011 Avrupa borç kriz olarak sıralanabilir. Bir diğer yönden gelişmekte olan piyasalarda artan finansal kırılganlık, ABD-Çin ticaret savaşları ile artan iktisadi ve finansal riskler ortaya çıkmıştır. 11 Eylül saldırıları, ikinci körfez savaşı, Afganistan müdahalesi, Arap baharı ve Suriye savaşı, Ukrayna savaşı, covid 19 pandemisi gibi küresel düzeyde gelişmelerin ortaya çıkardığı siyasal riskler küresel düzeyde politika belirsizliklerine neden olmuştur. Bu bağlamda çalışmada yeni küresel finansal mimarinin tesisinden günümüze uzanan süreçte küresel politika belirsizliklerinin küresel finansal sistemin gelişimine olan etkileri dinamik olarak incelenmeye çalışılmıştır.

Çalışmada 1999' dan günümüze dinamik katsayılar gerçekleşen değerler ile karşılaştırılmıştır. Bu doğrultuda dönemler incelendiğinde savaş, ekonomik kriz, askeri müdahale dönemleri dışında olağan risklerin, finansın temel varsayımı olan risk-getiri doğrusal ilişkisi bağlamında finansal gelişimi pozitif etkilediği iktisadi, finansal, siyasal kriz ve kaos dönemlerinde ise bu risklerin finansal gelişmeyi negatif etkilediği sonucuna ulaşılmıştır. Bir bakıma finansın temel yaklaşımı çerçevesinde riskli finansal işlemlerin optimal düzeye kadar getiri sağladığı, bu düzeyden sonra ise finansal birimin varlığı ve sürdürülebilirliğini tehlikeye atması küresel düzeyde gözlemlenmiştir. Özellikle dünya ticaret politikaları belirsizlik endeksinin sistem üzerinde gözlemlenen negatif ve durağanlaştırıcı etkisi dikkat çekmektedir.

Bu sonuç günümüz ABD siyasal ve finansal yapısı üzerinde tartışılabilir. Bir bakıma, 2017' de göreve gelen ve iktisadi serbestlik derecesini azaltarak Çin'le ticaret savaşlarına başlayan Trump yönetimi ve küresel finans kesimi arasındaki politik mücadele çalışmada deneysel olarak da gözlemlenmiştir. Çünkü ticaret savaşlarının başladığı dönemde artan dünya ticaret politikaları belirsizlik endeksinde ortaya çıkan artış döneminde, finansal gelişme azalıp devamında durağanlaşmıştır. Ticaret savaşları olgusu bir bakıma Çin'e yatırım yapan başta ABD olmak üzere çok uluslu küresel şirketlerin iktisadi karlarını finans kesiminin ise finansal karlarını azaltmıştır. Küresel finansal krizin olumsuz etkilerinin henüz nötrlenemediği, ticaret savaşlarının arttığı, covid-19 pandemisi ve artan jeopolitik risklerle birlikte küresel finansal sistemin gelişiminde ortaya çıkan daralma ve durağanlaşma yeni küresel finansal mimarinin güçlendirilerek ve reorganize edilmesi ve güncellenmesi gerektiği teorik olarak öne sürülebilir.

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