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Blockchain Technology Adoption by Chain Professionals

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Abstract--- *Block chain, which was proliferated by Bit coin, is a decentralized and disseminated database to store exchange data. Instead of relying upon delegates, for example, banks in the center, this innovation lets gatherings to record exchanges legitimately on connected records known as square chains making these exchanges relatively increasingly straightforward. The digitalization has achieved new relationship models in the entire production network system, and this inclining innovation is acquiring another marvel of connections co ordinations and store network frameworks. There are numerous examinations and examinations revealed in the writing on block chain, in any case, center around singular level block chain appropriation conduct isn't greatly known. This investigation endeavors to limit this hole by helping to comprehend selection goal and desire for work force in coordination and inventory network in Sri Lanka. Remembering the innovation acknowledgment models and jumping into the developing writing on block chain innovation, inventory network frameworks and system hypothesis, this investigation proposed a revised variant of Unified Theory of Acceptance and Use of Technology model. This examination gathered quantitative information utilizing on the web survey and conveyed Partial Least Square Structural Equation Model to assess proposed model to depict the components impacting people's selection conduct. The outcomes uncovered that Performance Expectancy, Effort Expectancy, Blockchain Transparency and Trust were altogether impacting store network experts' Behavioral Intention to utilize Block chain and Behavioral Intention and Facilitating Conditions were essentially affecting their Behavioral Expectation. Discoveries of this cross-sectional examination extensively contributes the developing writing on Blockchain selection in store network the board space.*

Keywords--- *Blockchain, Supply Chain, Adoption, UTAUT, Sri Lanka.*

I. INTRODUCTION

The fast advancement of data and advances lately has added to the upsurge of interruptions in many plans of action especially those in the field of coordination and inventory network the board (Goldsby and Zinn, 2016), causing a few effects on L&SCM organizations which in this way needed to take critical reconfiguration measures on their models of activity. Entanglements emerge because of those measures remembering for the parts of trustworthiness amongst production network members, transparency, responsibility (Morgan, et al., 2015), cooperation (Tsanos & Zografos, 2016), sharing of information (Wagner &Buko, 2006) just as combination of the interest and supply chain (Stolze et al., 2015).

Nevertheless, there are emerging open doors for the improvement of wasteful SCM activity models with the present rise of a few imaginative technologies. The generally unmistakable of such innovations would be block

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chain which, in spite of as yet being in its early stages arrange as far as its application in L&SCM, is making a major mix in inventory network (Francisco & Swanson, 2018) and showing high possibilities in renovating the connections in the field (Kshetri, 2017).

Blockchain innovation is getting perceived as an innovation having the capacity to move an expansive scope of businesses (Lee et al., 2019). This innovation was structured initially as a framework to record and confirm cryptographic money exchanges including mainstream Bit coin and is increasing incredible fascination in coordinations and store network the board. In light of its relationship with Bitcoin, it justified its underlying consideration and its capacity to make a straightforward and conveyed record of exchange data (Francisco and Swanson, 2018). It is likewise alluded now and then as Distributed Ledger Technology allowing clients to record and share a framework's state as a typical view over an appropriated system (Meunier, 2018). It is a shared system keeping the records of exchanges of computerized resources by methods for dispersed records that are not constrained by delegates; for instance, banks and governments (Min, 2019).Being a conveyed record, having decentralized stockpiling, demonstrating security with confirmation and changelessness are a portion of the inherent highlights of block chain (McGhin, 2019).

Blockchain innovation has in truth been used in various fields including fabricating (Li et al., 2018), genuine state (Veuger, 2018), clinical preliminaries (Benchoufiet al., 2017) just as business advancement (Y. Chen,2018).Blockchain encourages the sharing of genuine world datasets to ensure that the trustworthiness of the mutual datasets isn't undermined (Banerjee et al., 2017). Because of its more prominent security, straightforwardness, detect ability and proficiency, block chain innovation is unmistakably progressively helpful for inventory network activities (Aste et al., 2017; Kshetri, 2018). Network approval is utilized by this innovation to keep the substance of records synchronized by recreating over numerous clients (Aste et al., 2017). Despite the fact that its joining with SCM is still in earliest stages level (Queiroz &Wamba, 2019), it likewise improves coordinated effort among the stock chains members (Aste et al., 2017) driving tolesser consumptions andimprovedproductivity. Reliability is another essentially improved viewpoint with blockchain selection whereby the pathways of merchandise are recognizable all through the store network, giving simplicity of brain to clients. Blockchain has recognizability components (Biswas et al., 2017) that empower the discovery and aversion of fake exercises and phony items all through the chain of supply (R. Chen, 2018). Aside from decreased expenses and upgraded profitability, blockchain additionally offers various different advantages for L & SCM including being straightforward and at risk (Kshetri, 2018),having the capacity to follow item pathways and forestall deceitful exercises (Biswas et al., 2017), just as arrangement of cyber security and assurance (Kshetri, 2017), among others. The premium and interest in blockchain have developed essentially having installments and inventory network as the most two promising cases (George et al., 2019).The relationship models among the production network members can be redesigned utilizing the innovation's alter safe feature(Aste et al., 2017). Being still in its initial period of execution in L&SCM, blockchain is yet being completely embraced by associations. There stays a need to get a handle on the conduct and acknowledgment of people towards new innovation which is the reason various investigations are constantly being done as for innovation acknowledgment models(TAMs) (Davis, 1989; Venkatesh et al., 2012; Venkatesh et al., 2003).One promising methodology towards such comprehension had come about

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because of before TAMs that had concocted the Unified Theory of Acceptance and Use of Technology(UTAUT) (Venkatesh et al., 2003), inevitably driving further toUTAUT2 (Venkatesh et al., 2012).

Caps have been joined in various settings by different studies (e.g.: Wamba et al., 2017; Zhang et al., 2018). Aside from that, a few studies on blockchain and production network have additionally been led to assemble genuinely necessary experimental proof (Wamba, 2018). In spite of that, there are not many examinations on the parts of blockchain appropriation conduct and the inspirations for it, and this investigation expects to fill this hole.

Consequently, as a general outline, this investigation offers to enhance the collection of information on IT appropriation, explicitly blockchain innovation reception, particularly for the utilization of scholastics and industry players who remain to profit by a significant comprehension of individual selection conduct.

II. THEORETICAL BACKGROUND

2.1. Blockchain and Supply Chain

The utilization of blockchain was first presented in the digital currency market, in the type of troublesome innovation (Nakamoto, 2008). A blockchain is on a very basic level made up of several dispersed databases or records (Kano and Nakajima, 2018) that exist and capacity in a common and synchronous condition or chain where the clients are liable for approving data (Aste et al., 2017). Seebacher & Schüritz (2017) characterized it as: Blockchain is a common/appropriated database in a distributed system. It has a connected stockpiling unit known as squares with exchange subtleties time stamped that are verified by open key encryption.

Being scattered in nature, each exchange should be approved and this averts the event of any type of changes (Y. Chen, 2018) with the guide of the innovations alter safe element. With another significant component for example detect ability, every exchange's inceptions and pathways can without much of a stretch be followed. Basically, the plan of information is looking like squares in a consecutive chain (Li et al., 2018) whereby the present square is foreseen to contain data from the first square.

The decentralized, shared tasks (R. Chen, 2018) implies that the approval and capacity of the exchanges are carried out on the premise of dispersed consent, whereby a focal approving element isn't really required. The chained blocks empower the simple recuperation of information history. With an individual hash and a particular ID, each square is perceivable; and with the ability of sending the past square's hash to the following square, more prominent exchange security is additionally created. The squares additionally store the recorded and approved exchanges did by other same-arrange PCs whereby every exchange is given a specific sequence and timestamp. Approval of an exchange implies that it can no longer be altered in any capacity. Moreover, since all exchanges and required data are shared system wide, every one of the members is appropriately educated offering ascend to more noteworthy straightforwardness and reliability. As recently proposed, the reconciliation of blockchain innovation in inventory network can possibly change the working relationship among all the system members, bringing about one with improved profitability and reduced costs.

In production network conditions, conventional builds including dependability, cooperative endeavors, information, input sharing and such posture critical implications. And, blockchain will help to encourage joining of

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inventory network further (Hofmann & Rüsch, 2017). Various investigations on the effect of blockchain on supply chains have been concentrating on angles such as expenditure, quality, chance minimization and adaptability (Kshetri, 2018) and issues with detect ability (Biswas et al.,2017; R. Chen, 2018) just as misrepresentation location (Toyoda et al., 2017). Blockchain offers different advantages including production network procedure and tasks improvement, exchanges that are progressively secure, straightforward and effective(Kshetri, 2018) too asnetwork-wide dependability and unwavering quality because of the mutual transaction and information. Positive results can likewise be normal from partner connections. Noteworthy improvement in traceability (Biswas et al., 2017) is another additional preferred position whereby the roots and pathways of items can be effectively followed prompting any vital coordination's administration updates. All said advantages snowball into the rebuilding of exchange related costs, especially because of the way that there is never again a requirement for a procedure mediator (Kim and Laskowski, 2017).

Security is a significant element in blockchain (Aste et al., 2017) whereby connections in the chain can be changed. The Internet of Things (Banerjee et al., 2017), digital physical frameworks (Yin et al., 2017) and large information examination (Li et al., 2018) are among current inventive advances that can be coordinated with blockchain. It can be seen that in spite of the fact that the blockchain can be incorporated with slanting creative advances, comprehension of its suggestion on SCM is inadequate (Wang et al., 2019).Studies analyzing such reconciliations are as yet in progress. To create consoling theories and the examination model, the resulting areas will manage the hypothetical background of blockchain (Kshetri, 2018), the system hypothesis (Mitchell, 1969) and UTAUT (Venkatesh et al., 2003).

This present examination treats the inventory network as unpredictably versatile frameworks organize, holding fast to the proposals of Carter et al. (2015). This modernity just recommends the significant capacity of supply systems behavior in an association. Because of the consistent trades of products, information and administrations among associations in an inventory network organize; the connection between the members can get perplexing to get a handle on too. Also, it is because of this that the essential system hypothesis ideas are remembered for this investigation (Borgatti& Foster, 2003) especially the informal community hypothesis characterized by Mitchell (1969). Another conspicuous rising expansion in store network is the inventory systems approach (Borgatti& LI, 2009). Input sharing all through the inventory network system may cause the arrangement of more assets, the incorporation of store network capacities with their requests just as dangers and vulnerabilities especially in the global supply systems. The selection of blockchain has a few obstructions connected to the system hypothesis, of which it additionally has a few direct ramifications, including organizational connections, trust, responsibility, and information sharing among others (Queiroz &Wamba, 2019).

2.2. Technology Acceptance Models

The acknowledgment and utilization of data and correspondence innovations have been fundamentally affected by their fast development. Strong models for getting a handle on appropriation practices are consistently being created by scientists in the executives data frameworks (Venkatesh et al., 2012) and the investigations principally center around the connection between the demeanors and behaviors of people (Davis, 1989).Using the Theory of

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Reasoned Action ideas as the premise (Ajzen and Fishbein, 1980), Davis (1989) developed the TAMto inspect the IT acknowledgment and reception practices of people. This groundbreaking work involved a double build comprising of apparent value (PU)and saw usability (PEOU), which additionally turned into the establishment for consequent models (Venkatesh et al., 2003;Venkatesh et al., 2008).Venkatesh et al. (2003) proposed the UTAUTby synthesizing eight past. The first UTAUT model is exceptionally unmistakable and has been utilized in various examinations, blending a few change proposition including for long range informal communication applications (Chua et al., 2018), cloud administrations utilized by educators(Wang, 2017) and frameworks for receiving creative innovations and procedures utilized by legislative bodies (Batara et al., 2017). Venkatesh et al. (2012) consequently proposed an all-inclusive adaptation of the UTAUT called UTAUT2 which coordinated three brand new constructs to be specific decadent inspiration, value worth, and propensity. UTAUT2 has since been gainfully utilized in various settings (Makanyeza, 2018). To anticipate conduct expectation and use, numerous creators utilize the UTAUT model's presentation hope, exertion hope, social impact and encouraging situations as exogenous develops. This investigation consequently is proposing a model receiving builds from the entrenched UTAUT model and coordinating two new develops to be specific blockchain straightforwardness and trust of store network partners embraced from (Queiroz, 2019). Notwithstanding, the model in this investigation avoids the first UTAUT model's arbitrator factors (Dwivedi et al., 2017).

III. THEORETICAL FRAMEWORK

The exploration model for the present examination was drawn from the amalgamation of past works with selection models and their all-inclusive renditions, block-chain technology, supply chain the executives just as the system hypothesis. A full handle on-the idea of block-chain reception implies that we have additionally comprehended the part of between firm proficient conduct and its critical effect on every one of the connections engaged with the production network organize. Discoveries from the surveys of-works on U TAUT, systems and store network speculations were utilized to set up the investigation builds. Resultant, in view of audits on UTAUT writing, the develop that go about as indicators of conduct goal and social desire were distinguished to be performance anticipation, exertion hope, and encouraging conditions. In the meantime, in view of systems and inventory network writings, the develop of block-chain straightforwardness and store network partners' trust-were likewise recognized as indicators of conduct goal and social desire.

The markers for execution anticipation specify the upgrades coming about because of block-chain as far as employment exercises hope for Expertness develop of exertion hope demonstrates the measure of additional endeavors that SCM experts need to release to utilize block-chain. The build of facilitating conditions shows how-organizational framework is formed to encourage block-chain transactions. The develop of block chain straightforwardness indicates the degree of data sharing and straightforwardness among associations. At long last, the develop of trust among store network partners determines the confidence level towards the exchanges and the members because of embracing block-chain. Meanwhile, social aim (BI) relates to the goal of receiving block-chain innovation, while conduct desire (BE) shows the possibility of the production network experts to embrace block-chain innovation as reflected in their conduct.

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3.1. Performance Expectancy

Venkatesh et al. (2003) had prior characterized PE as: "the degree to which an individual accepts that utilizing the framework will support the person in question to attain gains in work execution" with regards to the present investigation, PE entails the degree to which an employee sees block-chain innovation use as useful in improving their productivity and execution. The inspiration for a representative to receive and utilize a specific new innovation is driven by the apparent focal points offered by the innovation, (for example, its degree of convenience) for the worker's profession (Venkatesh et al., 2003).

Improvement desire is high with block-chain applications including upgraded productivity and item quality, just as upgrades in other key store network processes (Kshetri, 2018). Because of the nonattendance of delegates to approve exchanges, block-chain innovation can decrease complexities and vulnerabilities identified with forms especially those that are worked on savvy contracts (Kim and Laskowski, 2017).Previous chips away at UTAUT2 demonstrated that the aim to utilize and embrace new innovation depend incredibly on desires identified with performance. Consequently, the speculation beneath is proposed:

H1: Performance anticipation fundamentally impacts the social goal to-adopt blockchain.

3.2. Effort Expectancy

EE is characterized as "the level of straightforwardness related with the utilization of the framework" (Venkatesh et al. 2003). It mirrors the effectiveness in utilizing an innovation. Individuals are more averse to utilize an innovation on the off chance that it is felt or detected to be hard to utilize or in the event that it needs more and additional endeavors (Francisco and Swanson, 2018) and it is connected with desires as far as proficiency (Brown et al., 2010). Proficiency in store network has sway on associations' intensity and different components form it (Francisco and Swanson, 2018). In this unique circumstance, inventory network proficient would assess the exertion they have to take to get comfortable with the framework and interface to do their errands. In the event that they believe they don't need to use more exertion, at that point their tendency for use will be decidedly influenced (Tumasjan, 2019). Henceforth, the speculation underneath is proposed:

3.3. Blockchain Transparency

Morgan et al. (2018) characterized inventory network straightforwardness as: "how store network data is imparted to partners". With regards to the present examination, blockchain straightforwardness (BT) demonstrates the models that a production network association uses to hand-off and report its activities to its system wide connections in order to guarantee staggered operational perceivability. System wide inventory network straightforwardness and responsibility are two viewpoints showed to be improved with the use of blockchain (Lu and Xu, 2017; Kshetri, 2018). This investigation consequently fights that BT altogether predicts the BI to embrace this innovation. BT is additionally demonstrated to improve coordinated effort among the production network members in a system, prompting significant mechanical and cultural changes (Aste et al., 2017). Thusly, the speculation beneath is proposed:

H3: Blockchain straightforwardness fundamentally impacts the conduct goal to embrace blockchain.

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3.4. Facilitating Conditions

Venkatesh et al. (2003) characterized FCas: "the degree to which an individual accepts that a hierarchical and specialized infrastructure exists to help utilization of the system". In the setting of the present examination, FC involves the representative's impression of the accessibility of related assets in the association to encourage blockchain use. Past investigations have shown that FCsuch as PCs, internet speed, and frameworks integration affect new innovation reception and utilization (Oliveira et al., 2014; Sabi et al., 2016; Venkatesh et al., 2012). In the earth of inventory network, blockchain-upheld exchanges are kept in distributed storage, rendering framework costs a non-obstruction to the innovation's appropriation. What's more, value-based duplicates are put away in the blockchain foundation, empowering questions and simple detectability of items or administrations (Francisco and Swanson, 2018;Tian, 2017). In that capacity, the theories underneath are proposed:

H4a. Encouraging conditions decidedly sway the social aim to adopt blockchain.

H4b. Encouraging conditions emphatically sway the social desire for blockchain selection.

3.5. Trust

Mayer et al. (1995) characterized trust as: "the readiness of a gathering to be vulnerable to the activities of another gathering dependent on the desire that the other will play out a specific activity imperative to the trust or, regardless of the capacity to screen or control that other party". In the setting of this investigation, partners' trust of supply chain (TR) involves the air of two or more supply chain associations in the system to be susceptible to each other and to satisfy complementary desires. Each plan of action depends extraordinarily on trust. The builds in an innovation acceptance model is fundamentally impacted by trust as appeared by past works (Liébana-Cabanillas et al., 2017; Riffai et al., 2012).The comprehension of the relevant impact of trust was bolstered by noteworthy data(Wu et al., 2011). The requirement for a careful comprehension about the elements of authoritative connections can be clarified utilizing the interpersonal organization approach (Tichyet al., 1979). With the presence of various connections and a level of multifaceted nature in supply chains, associations need to have set up a system wide collaboration, which renders the improvement of supporting coordination devices (Grandori& Soda, 1995).Inter-hierarchical connections in a production network arrange are operationally fundamental, for example, that of data sharing which is crucial for operational accomplishment.

Be that as it may, poor straightforwardness among the production network members represents a hindrance for the business elements (Lamminget al., 2001). Blockchain innovation has been shown as a powerful answer for this issue because of its system wide ability in limiting uncertainties and engaging transparency (Biswas et al., 2017). Various examinations have likewise demonstrated that the innovation upgrades the degree of trust among the inventory network members (Kano and Nakajima, 2018; Kshetri, 2018; Zou et al., 2018). Consequently, the speculations underneath are proposed:

H5a: Trust between inventory network partners altogether impacts behavioral intention to embrace blockchain.

H5b: Trust between inventory network partners altogether impacts behavioral expectation for blockchain appropriation.

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3.6. Behavioral Intention and Behavioral Expectation

Stewart et al. (2002) characterized BI as "people conduct expectation to utilize innovation" and Warsaw and Davis (1985) characterized it as:"the degree to which a person has detailed cognizant designs to perform or not play out some predefined future conduct". With regards to this study, BI involves the social signs exhibited by a representative to embrace blockchain. Social desire (BE) is considered as inventory network experts' likelihood or probability to complete certain exercises associated with the utilization of blockchain innovation (Queiroz &Wamba, 2019). Thus, the theory beneath is proposed:

H6. Conduct Intention altogether impacts social desire for blockchain reception.

In light of the predestined talks and speculations, the examination model appeared in Figure 1 is inferred for this investigation.

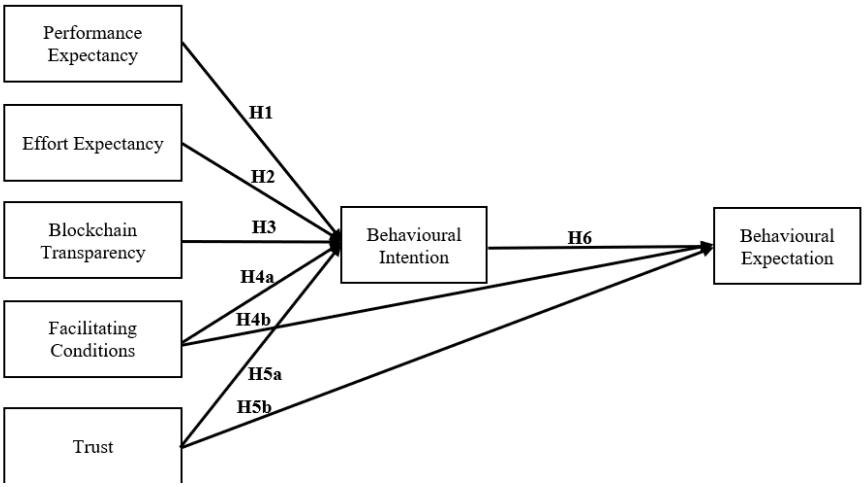

Figure 1: Research Model

IV. METHODOLOGY

4.1 Research Design

The sort of examination was correlation investigation where the scientist was keen on portraying the significant factors related with the issue (Sekaran and Bougie, 2016). This current examination's goal was to portray the elements that impact the inventory network experts' conduct goal and desire to utilize blockchain innovation. The examination setting was non-thought up where the examination occurred in a characteristic setting with no obstructions. The time skyline was cross-sectional and the information were gathered for a solitary time of four months. The unit of examination of this investigation was people who volunteered to fill in the online poll with no monetary or different motivating forces. Since it was hard to characterize the populace size, the specialist depended on non-probabilistic advantageous testing procedure to gather information and numerous examinations on innovation appropriation have utilized this strategy.

Things for the instrument were adjusted from past investigations on blockchain appropriation and innovation selection (Maruping et al., 2017; Morgan et al., 2018; Venkatesh et al., 2012) and contextualized for this

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examination. The things estimated the reactions in a seven-point Likert-Scale, 1 for Strongly Disagree and 7 for Strongly Agree.The pre-overview test was finished by flowing a printed adaptation of the instrument among 17 analysts in colleges and 15 inventory network specialists to approve the poll, thus a few inquiries were re-expressed to improve perception and comprehension. The survey was actualized as an online structure utilizing Google Forms.

Production network administrators, specialists and the individuals who were following postgraduate and expert capabilities in inventory network and the individuals who include in store network exercises were the objective populace of this investigation. Email addresses just as WhatsApp quantities of 457 such staff were gotten and messages and WhatsApp messages containing join for online structure were sent, and one delicate update was additionally sent to advance reaction.

Accordingly, 297 reactions were gotten during the four months' time frame beginning from February 2019 to May 2019. Out of the 297 reactions, 13 were disposed of due to non-finishing. Consequently, 284 reactions were considered for further investigation.

4.2 Data Analysis

The exact approval of hypothetical ideas in business look into are changed by the development of multivariate examination strategies (Akter et al.,2017) and Structural Equation Modeling (SEM) is utilized in explores so as to evaluate the legitimacy of hypotheses utilizing the measurable certainties (Ringle et al., 2015). Covariance-Based SEM (CB-SEM) and Partial Least Square SEM (PLS-SEM) are the two generally utilized techniques. To assess the estimated model, this investigation utilized PLS-SEM utilizing SmartPLS 3 application.

Many research circumstances and entangled models utilized PLS-SEM (Raza at el, 2019). Further, as far as test size and leftover appropriations, the PLS-SEM has fewer confinements when contrasted and the other technique. (Jaw line, 1998). The estimation was completed in two-advance methodology. In the initial step, assessment of the estimation model was done and the estimation of the basic model was completed in the subsequent advance to test the speculations.

V. DATA ANALYSIS

5.1 Measurement Model

The strength of the measurement model is revealed by the assessment of convergent and discriminant validity (Hair et al., 2016). The researcher carried out the assessment of measurement model to understand the convergent and discriminant validity of the model (Komiak&Benbasat, 2006). The observed items should have a Composite Reliability (CR) value of 0.7 or above (Fornell & Larcker, 1981) and according to Henseler et al.(2015), Dijkstra's Rho_A consistent reliability value is also expected to be 0.7 or above. Table 1 shows that both CR value and Dijkstra's Rho_A values are satisfactorily above the threshold points.

Item loadings with the value of 0.7 and above with statistical significance reveal that the measures do what they are expected to measure (Henseler et al., 2009). It can be observed in Table 1 that the loadings are above the cut-off values with T-values of above 1.96 meaning that they are statistically significant. The Table 1 also shows the results of Consistent PLS Algorithm process of SmartPLS reporting the Inner VIF values.

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According to Kock (2017), for the model to be free from Common Method Bias, the VIF values are expected to be less than or equal to 3.3 when conducting such multicollinearity diagnosis. According to Hair et al. (2016), items should have a VIF values between 0.2 and 5. It can be observed in the same table that all items are meeting these criteria. Therefore, it is confirmed that the model proposed for this study is free from Common Method Bias.

Table 1: The Results of Measurement Model Evaluation

Constructs	*Items*	*Loadings*	*Std. Dev*	*T Statistics*	*Cronbach's Alpha*	*rho_A*	*CR*	*AVE*	*VIF*
PE	PE2	0.748	0.032	23.04	0.888	0.893	0.918	0.693	1.817
	PE3	0.850	0.021	41.23					2.454
	PE4	0.849	0.019	45.49					2.279
	PE5	0.869	0.016	54.23					2.965
	PE6	0.840	0.019	44.75					2.646
EE	EE1	0.871	0.019	44.69	0.883	0.885	0.92	0.741	2.364
	EE2	0.841	0.027	31.19					2.121
	EE3	0.900	0.017	52.94					2.991
	EE4	0.830	0.031	26.68					2.234
BT	BT1	0.887	0.017	52.35	0.873	0.898	0.912	0.723	2.746
	BT2	0.899	0.012	75.26					2.837
	BT3	0.793	0.036	22.00					1.955
	BT4	0.817	0.032	25.64					2.023
FC	FC1	0.803	0.029	27.91	0.898	0.899	0.925	0.711	2.016
	FC2	0.878	0.014	61.70					3.028
	FC3	0.857	0.018	46.98					2.512
	FC4	0.797	0.035	23.00					1.978
	FC5	0.876	0.018	48.30					3.008
TR	TR1	0.859	0.022	39.14	0.884	0.886	0.920	0.743	2.503
	TR2	0.878	0.020	44.45					2.684
	TR3	0.878	0.016	56.19					2.452
	TR4	0.831	0.025	32.99					1.952
BI	BI1	0.843	0.027	31.71	0.905	0.907	0.934	0.779	2.260
	BI2	0.905	0.014	66.45					3.051
	BI3	0.884	0.019	46.54					2.832
	BI4	0.897	0.016	55.93					3.001
BE	BE1	0.846	0.036	23.66	0.809	0.839	0.886	0.723	1.835
	BE2	0.897	0.016	55.84					1.938
	BE3	0.805	0.039	20.64					1.620

Appraisal of merged legitimacy builds up the unidimensionality of develops. The merged legitimacy clarifies the expand that equivalent reasonable area is reflected by the things identified with builds (Henseler et al., 2009). Normal Variance Extracted must be above 0.5 for setting up joined legitimacy (Larcker, 1981). The estimations of AVE appeared in Table 1 show that the develops have good score in their separate AVE values and henceforth, the concurrent legitimacy of the estimation model is built up.

The discriminated legitimacy exhibits the reasonable contrast between the builds (Henseler et al., 2009). As indicated by Hair et al. (2016), the Fornell-Larcker' measure requests that the square base of AVE of the build ought to be above 0.7 and must be bigger than its relationship esteems with different develops. The Table 2 shows that both these criteria are met agreeably and discriminate legitimacy of the model is likewise settled. Table 2: The results of discriminant validity analysis

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	BE	*BI*	*BT*	*FC*	*PE*	*EE*	*TR*
BE	**0.850**						
BI	0.442	**0.882**					
BT	0.400	0.607	**0.850**				
FC	0.395	0.621	0.521	**0.843**			
PE	0.385	0.600	0.534	0.592	**0.832**		
EE	0.332	0.530	0.503	0.498	0.404	**0.861**	
TR	0.429	0.643	0.550	0.595	0.558	0.434	**0.862**

5.2 Assessment of Structural Model

The researcher carried out the assessment of structural model after making sure that the reliability and validity of the measurement model was established. The assessment of the structural model was carried out suing SmartPLS 3. The goodness of the model was estimated using the R^2 value that measures the coefficient of determination and path coefficients' level of significance (β value) (Hair et al., 2016).

The R^2 value showcases the predictive strength of the proposed model and at the same time the impact of exogenous variables on the endogenous variable is characterized by the path coefficients (Chin, 1998).

As shown in Table 3, all independent constructs except FC were significantly influencing their corresponding dependent variables. The path coefficients of the structural model were evaluated to evaluate their statistical significance, for this purpose the Bootstrapping algorithm was run in the software. The statistical significance of them are also shown in the same Table with t-values and p-values.

Accordingly, PE (b=0.181, t=2.801, p<0.05), EE (b=0.157, t=3.026, p<0.05), Blockchain Transparency (b=0.196, t=3.695, p<0.001), and Trust of Supply Chain Stakeholders (b=0.259, t=3.943, p<0.001) were impacting the BI statistically significantly whereas the construct FC did not show a statistically significant impact on the Intention. In the meantime, FC (b=0.131, t=2.048, p<0.05), Trust of Supply Chain Stakeholders (b=0.201, t=2.471, p<0.05), and BI (b=0.233, t=3.952, p<0.001) had statistically significant impact on BE for Blockchain Adoption. Hence, the statistically significant relationships confirm that hypotheses H1, H2, H3, H4b, H5a, H5b, and H6 are supported, while H4a is rejected.

Table 3: Results of the Assessment of Structural Model

Relationship	*Path Coefficient*	*ST.DEV*	*T Statistics*	*P Values*		f^2
PE -> BI	0.181	0.065	2.801	0.005	Supported	0.0438
EE -> BI	0.157	0.052	3.026	0.003	Supported	0.0389
BT -> BI	0.196	0.053	3.695	0.000	Supported	0.0535
FC -> BI	0.180	0.103	1.744	0.082	Not Supported	0.0389
FC -> BE	0.131	0.064	2.048	0.041	Supported	0.0119
TR -> BI	0.259	0.066	3.943	0.000	Supported	0.0876
TR -> BE	0.201	0.081	2.471	0.014	Supported	0.0277
BI -> BE	0.233	0.059	3.952	0.000	Supported	

Table 4: Coefficients of Determination

	R Square	*R Square Adjusted*
BE	0.241	0.233
BI	0.589	0.581

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The coefficients of determination (R^2) was calculated and are shown in Table 4. The coefficient of determination represents the amount of variance the exogenous variables have in the endogenous variable. Accordingly, the Behavioural Intention scored .589 meaning that 59% of the variance are explained by Performance Expectancy, Effort Expectancy, Blockchain Transparency and Trust of supply chain stakeholders in BI.BE earned 0.241meaning that 24% of the variance are explained by Facilitating Conditions, Trust of supply chain stakeholders and BI in BE.

Although it is hard to define a clear rule of thumb for acceptable R^2 values since it depends on model complexity and research discipline, however, different scholars have prescribed different cut-off points for R^2 values. In the same token, Falk and Miller (1992) mention that R^2 value of the endogenous variable should be at least 0.10. Hence, the R^2 values scored in this investigation by the variables BI and BE are well above the recommended values.

The Effect Size (f^2) test to see the impact of exogenous variables on the endogenous variables was obtained as shown in Table 5. In the PLS path model, a test was done by removing an exogenous construct to see if such removal had substantial effect on the endogenous construct. To calculate this effect, the formula $f^2 = (R^2_{Incl.} - R^2_{Excl.}) / (1 - R^2_{Incl.})$ suggested by Chin (1998) was usedin this study. According to Cohen's (1988) guidelines, the values of $f^2 \geq 0.02$, $f^2 \geq 0.15$, and $f^2 \geq 0.35$ represent small, medium, and large effect sizes, respectively (Hair et al., 2016). According to the Table 5, the values of f^2 ranged from 0.012 to 0.088 meaning the impact of exogenous variables on the endogenous variables was small.

Table 5: Effect Sizes

Exogenous	*Endogenous*	*R^2 Included*	*R^2 Excluded*	*Effect Size*	*Inference*
PE	BI	0.589	0.571	0.0438	Small Effect
EE	BI	0.589	0.573	0.0389	
BT	BI	0.589	0.567	0.0535	
FC	BI	0.589	0.573	0.0389	
TR	BI	0.589	0.553	0.0876	
FC	BE	0.241	0.232	0.0119	
TR	BE	0.241	0.220	0.0277	

Stone-Geisser's Q^2 value (Geisser, 1974) is calculated to evaluate the quality of PLS model; this is an indicator of model's predictive relevance. It is the capability of the model to predict (Tenenhaus et al., 2005). When the value of Q^2 is greater than zero it means the model has predictive relevance and if it is less than zero it means the model lacks predictive relevance. Further, the values of $Q^2 \leq 0.02$ but < 0.15, $Q^2 \geq 0.15$ but < 0.35, $Q^2 \geq 0.35$ means Week Effect, Moderate Effect and Strong Effect, respectively (Hair et al., 2016). Blindfolding technique was used to measure the Q^2 values to confirm the predictive relevance. The results in the Cross Validated Redundancy approach showed that BI ($Q^2 = 0.426$) and BE ($Q^2 = 0.157$) had predictive relevance with strong and moderate level effect respectively.

VI. Discussion and Conclusion

The findings of this study bring valuable theoretical and practical contributions. Significant correlations with solid coefficients were indicated via the validated model. The researcher developed theoretical framework, proposed a research model and empirically validated the same to understand individual's behavior towards blockchain adoption; especially these individuals were supply chain professionals. It was understood from a thorough search

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and review of existing studies on technology adoption behavior that investigations on blockchain adoption are scanty except a few such as (e.g.: Queiroz &Wamba, 2019). Hence, the researcher was motivated to make use of the constructs from famous UTAUT model as well as other studies such as by Queiroz and Wamba (2019) and tested a model in supply chain domain in Sri Lankan context.

The study revealed that the variance in BI to use supply chain to be 59% and BE to be 24%. These values are more satisfying like previous studies (e.g.: Queiroz and Wamba 2019; Maruping et al., 2017).As similar to prior investigations, BI has shown to be a predictor of BE (Queiroz and Wamba 2019; Maruping et al., 2017) for the adoption of blockchain technology in supply chain. The PE showed significantly positive impact on BI. This is in line with the studies such as Queiroz and Wamba(2019), Maruping et al. (2017) and Venkatesh et al (2012).TR has confirmed to be the strongest predictor of BI and BE in Sri Lankan context implying that that trust between supply chain stakeholders will affect blockchain adoption in the country.

In a study by Queiroz and Wamba (2019) trust was found to be an insignificant factor in Indian as well as American context. In contrast, the finding of this study has not been in line with theirs and is in alignment with other studies such as by Liébana-Cabanillas et al. (2017) and Weerakkody et al. (2013).

Unlike prior studies on blockchain adoption, this study has shown the BT to be a significant predictor influencing the BI in Sri Lankan context. PE has been a consistent predictor of BI in many previous investigations (Queiroz and Wamba 2019; Alalwan et al., 2017; Maruping et al., 2017; Oliveira et al., 2014; Weerakkody et al., 2013; Venkatesh et al., 2012) on different contexts meaning that the expectations of supply chain stakeholders would play an important role in their adoption of block chain technology. FC has shown to be an important predictor of BE but it has confirmed not to be a significant predictor of BI as with the studies carried out by Queiroz and Wamba (2019).

The more facilitating infrastructure's availability the more that supply chain stakeholders' expectations on blockchain adoption. EE also has shown to be another predictor of BI as like prior studies (e.g.: Venkatesh et al., 2012) indicating that it has significantly positive impact on the adoption of blockchain in Sri Lanka. In emerging and developing economies like Sri Lanka, influence of friends at work and families play an important role on the adoption of technologies.

VII. LIMITATIONS AND FUTURE RESEARCH

There are a number of limitations in this study that could be tackled in future studies. Firstly, only selected constructs were considered in the model to determine blockchain adoption in the context of SCM. Hence, future studies could consider incorporating constructs from models such as TJW Framework (Sun & Teng, 2017). Secondly, the constructs Social Influence, Price Value and Hedonic Motivation from UTAUT model as well as its moderators were not incorporated in this study, which could be undertaken by future studies. Finally, the findings of this study are not generalizable to other countries as the model had only been tested in Sri Lanka which is a developing country. Hence, future studies can be conducted in other countries on different contexts using a comparative blockchain adoption modeling.

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