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A Model of Factors Affecting Consumers Intention to Use E-Payment Services: Evidences from Addis Ababa

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Abstract: The study examined factors that determine the intention of consumers towards using electronic payment services, by developing, adapting and testing a model. The study utilized the extended Unified Theory of Acceptance and Use of Technology (UTAUT2) with a rational substitution of Habit by Image of Social Status. The study used data from 385 respondents. Regression analysis was run for checking the relationship between the variables and testing the hypotheses. The results revealed that performance expectancy, facilitating conditions, price value, and image significantly and positively influenced the behavioral intention of using e-payment services and all the predictor variables had positive associations with the predicted. The findings are crucial for the relevant stakeholders including the financial institutions such as banks, e-payment service providers, and the concerned regulatory bodies to investigate the critical areas on intervention to the enhanced usability and expansion of cashless transaction platforms.

Keywords: Behavioral intention, Effort expectancy, E-payment, Facilitating conditions, Hedonic motivation, Performance expectancy, Price value, Social influence.

I. Introduction

The current digital communication findings have dramatically shifted the multifaceted nature of global interactions into totally different arenas nowadays with the advent of modern information and communications technologies (ICT). Most of the current global transactions are replacing much of the physical process, with the help of cashless technologies, especially in the advanced economies with the introduction of e-commerce. This leads us to the analogy that 'as payment is a core part of the mercantile process, an electronic payment system is an integral part of e-commerce' (Sumanjeet, 2009).

According to Rachna and Singh (2013), an electronic payment (e-payment) system is described as the settlement of payments virtually using the available telecom networks such as the Internet, mobile USSD, short messaging services (SMS), and other wireless technologies, without physical involvement of the traditional provision of value in cash or in-kind in exchange for the receipt of goods or services. Said another way, *"we can say that e-payment is a method in which a person can make online payments for his [or her] purchase of goods and services without the physical transfer of cash and cheques, irrespective of time and location*" (Rachna and Singh, 2013, p. 25).

Even though it gets frequently updated through time depending on the emergence of newly developed e-payment options, the general concept of e-payment currently encompasses all transactions that exclude the physical transfer of the paper money (i.e. cash, cheque, etc.) and/or its metallic denominations, replacing them by the electronic means. Humphrey (2001) noted that, generally, the implementation of e-payment involves the use of computer networks such as the Internet and digitally stored value systems which allow bills to be paid directly from bank accounts, without the account holder being present at the bank, and without the need of writing and mailing cheques.

II. Literature Review

A. Defining E-Payment

Different scholars have defined the term e-payment as a financial transaction made without the use of paper documents such as cheques. This mode of transaction is performed over an electronic network such as the internet, meaning, it is a method in which a person can make online payments for his purchase of goods and services without the physical transfer of cash and cheques, irrespective of time and location. The definition from the European Central Bank, in its first article of 2004 directives (Hartmann, 2006), has tried to include wider issues might arise in the future, giving the definition as electronic money shall mean monetary value as represented by a claim on the issuer which is: stored on an electronic device; issued on receipt of funds of an amount not less in value than the monetary value issued; and accepted as means of payment by undertakings other than the issuer.

B. The Concept of E-Commerce and E-Payment

So far, people have passed through transacting with each other starting from the periods of bartering up to the emergence paper notes and the current virtual transactions of different types (Onkvisit and Shaw, 2004). Ways in which people can pay electronically are becoming more and more systematically sophisticated but with fewer efforts from the users' side, leading to new options for transferring (or even depositing) money. Innovative payment services try to cater to new markets and needs. They may promise high convenience, flexible use, high transaction speed and/or lower fees than traditional payment instruments (Herausgeber, 2006).

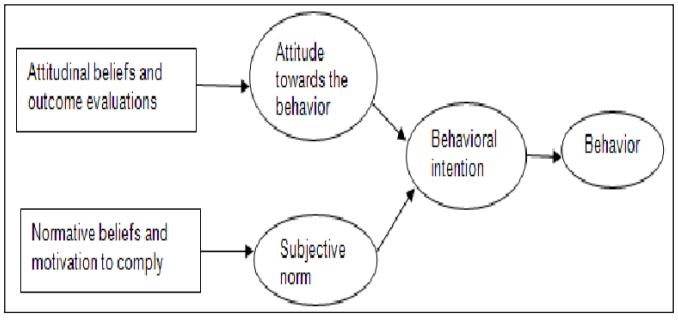
When seen from its general picture, e-commerce embraces many components including the Internet communication infrastructure, various web and e-commerce application servers, client browsers, products/services, databases, security and firewalls, electronic payment, and many others. To enables well-developed e-commerce website storefront to work as expected by the seller and the buyers, the business needs to put all these piece together (Kou, 2003).

III. Theories and Models

There are a bunch of theories formulated by different scholars to test the people's intention to use and actual adoption and usage of any technological findings from information systems, information technologies, and disciplines relating to human behavior and psychology (Dwivedi *et al.,* 2017). Among the well-known theories and models, some of them are mentioned in the subsequent paragraphs.

A. Theory of Reasoned Action (TRA)

The theory of reasoned action was first developed by Fishbein and Ajzen (1975) to propose a decision to do or take actions by a person is determined by that person's individual control of his/her behavior that is driven by behavioral intentions. This intention is defined by the individual's attitudes and his/her subjective norms towards that behavior (Raeisi and Lingjie, 2016; Ismail and Razak, 2011).

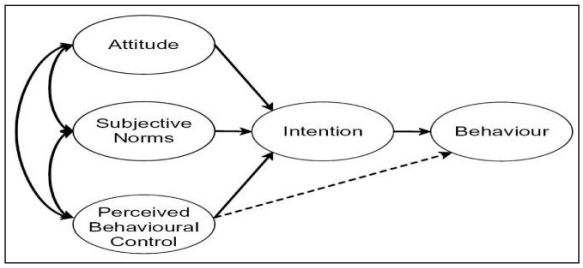


Source: Adopted from Ismail and Raza (2011).

Fig. 1: Model of Theory of Reasoned Action

B. The Theory of Planned Behavior (TPB)

According to Solomon *et al.* (2006), the model of reasoned action was extended to another more extended model called the Theory of Planned Behavior that predicts behaviors over which consumers perceive they have control by examining their perceived behavioral control. According to this model, the combination of motivational factors, attitudes toward a behavior, perceived behavioral control and subjective norms can influence the intention of a behavior. The following figure summarizes TPB factors and variables.

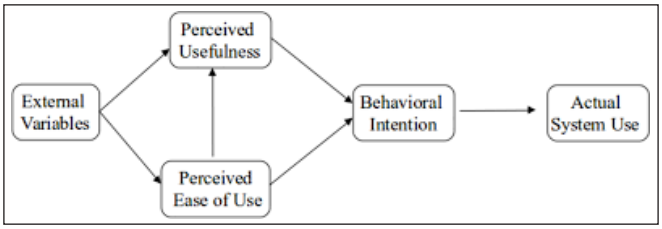


Source: Adopted from Raeisi and Lingjie (2016).

Fig. 2: Model of Theory of Planned Behavior

C. Technology Acceptance Model (TAM)

The Technology Acceptance Model (TAM) is adjusted to information systems contexts and was developed to forecast information technology acceptance and usage on the job environments. Unlike the Theory of Reasoned Action (TRA), the final conceptualization of TAM eliminates the construct of attitude in order to better explain intention carefully. TAM has been widely applied to a diverse set of technologies and users (Chao, 2019). The model is shown below.



Source: Adapted from Davis (1985).

Fig. 3: Technology Acceptance Model

IV. Empirical Review and Hypothesis Development

This sub-section presents the seven hypotheses projected in the study along with the empirical explanations of how and why these hypotheses were developed.

A. Performance Expectancy (PE)

After reviewing about eight preceding human psychological theories, Venkatesh *et al.* (2003) in their first UTAUT model

tried to integrate the different but somewhat similar constructs of previous theories into a more unified model. Performance expectancy is among these modified constructs especially from the earlier factor of perceived usefulness by Davis (1989) of TAM/TAM2 and onwards. Performance expectancy is defined as the extent that an individual assumes about the attainment of an enhanced performance in his/her job when he/she applies the system into the jobs. This construct involves an individual believes that using the system will assist him or her to excel in job performance (Venkatesh *et al.,* 2003; Raeisi and Lingjie, 2016; Oliveira *et al.,* 2014). Thus, the following hypotheses are proposed.

H1: Performance Expectancy (PE) has a significant influence on the behavioral intention of customers to use e-payment systems.

B. Effort Expectancy (EE)

Effort expectancy is derived from its antecedent ease of use construct (EOU) of the TAM. The developers of the UTAUT model have similarly defined effort expectancy to the ease-of-use variable as the degree of simplicity associated with the use and accepts of the system. In other words, this construct is about the amount of effort needed for a person to develop the intention and use of a given technology. In a similar way as the performance expectancy construct, effort expectancy is also related to some of the previous models such as perceived ease of use (TAM/TAM2), complexity (MPCU), and ease of use/complexity (IDT) (Venkatesh *et al.,* 2003; Chao, 2019; Ahmad, 2014). Constructs that are related to the effort are believed by Venkatesh *et al.* to be more prominent in the early stages of experiencing a new behavior, during which process issues represent challenges to overcome, and later became overshadowed by instrumentality concerns (Venkatesh *et al.,* 2003; Huang and Kao, 2015; Oliveira *et al.,* 2014). Hence, the following hypothesis has been posited.

H2: Effort Expectancy (EE) has a significant influence on the behavior intention of customers to use e-payment systems.

C. Social Influence (SI)

Social influence is defined as the extent to which an individual perceives that other people that are important to the consumer such as his/her family and friends believe he/she should use a particular technology (Venkatesh *et al.,* 2012; Venkatesh *et al.,* 2003). This construct assumes that people's inclinations to do a certain activity or behave in a certain way are shaped by other people who have intimacy to or any other indirect relationships; they want to look like or appease these influencers in meeting their expectations (Oliveira *et al.,* 2014). The social influence constructs are represented by *subjective norm* form older versions such as TRA, TAM2, TPB/DTPB, and C-TAM-TPB, social factors of the MPCU, and *image* from the Innovation Diffusion Theory (IDT). Considering these arguments, the following hypothesis has been proposed.

H3: Social Influence (SI) has a significant influence on the behavior intention of customers to use e-payment systems.

D. Facilitating Conditions (FC)

Facilitating conditions are defined as the degree to which consumers of a technology perceive that an organizational and technical infrastructure, personal support, and other necessary resources exist to support the use of the system are available (Venkatesh *et al.,* 2003). A consumer who has access to a favorable set of facilitating conditions is more likely to have a higher intention to use technology, whereas the reverse applies when things that facilitate it are non-existent or lower. Depending on the contexts of different countries in the study being conducted, the facilitating conditions may vary. For a study based on the acceptance of e-payment, the facilitating conditions include the network infrastructure, a good customer database, the availability of the internet, other people around to provide support, etc. (Venkatesh *et al.,* 2012; Venkatesh *et al.,* 2003). Hence the proposed hypothesis in this regard is:

H4: Facilitating Conditions (FC) have a significant influence on the behavior intention of customers to use e-payment systems.

E. Price Value (PV)

Venkatesh *et al.* (2012) incorporated three distinctive constructs to their prior model of UTAUT into UTAUT2. These unique constructs are *price value, hedonic motivation,* and *habit*. The price value concept was dedicated to the actual consumers of technology, mainly mobile payment technologies as it was believed by the developers that consumers actually pay for the service, unlike organizational staffs, who get the service for free at the expenses of their employers (Venkatesh *et al.,* 2012; Jakkaew and Hemrungrote, 2017). Consumers usually bear the monetary cost of such a use whereas employees do not. Thus, the value of the price will have a better weight as a result of the assumption that the use of new technology offers a better monetary cost, and such price value has a positive impact on intention. Consistent with this argument, many consumer behavior types of research included constructs related to cost to explain consumers' actions (Venkatesh *et al.,* 2012). This leads to the proposal of the following hypothesis:

H5: Price Value (PV) has a significant influence on the behavior intention of customers to use e-payment systems.

F. Hedonic Motivation (HM)

Hedonic motivation the other predictor among the newly included constructs in the UTAUT2 model. It is defined by

developers of the model (Venkatesh *et al.,* 2012) as the fun or enjoyment derived from using technology and it has been shown to play an important role in determining technology acceptance and use. Chao (2019) also defines the term as "the extent to which the activity of using a specific system is perceived to be enjoyable in its own right, aside from any performance consequences resulting from system use". This motivation is associated with the intrinsic/internal forces of an individual with respect to his/her psychological and backgrounds. Therefore, the following hypothesis has been projected:

H6: Hedonic Motivation (HM) has a significant influence on the behavior intention of customers to use e-payment systems.

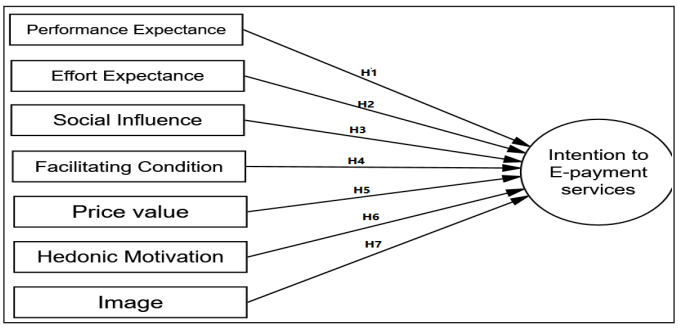
G. Image/Social Status (IM)

One decisive development in the advancement of modern information communication technology is its endowments to make people connected to each other without any geographic barriers. And this social interaction of people has made it inevitable to create a social status-seeking and/or the inclination to be seen as unique in the community, a Paul Boag, co-founder of web design agency Headscape, pointed out (South University, 2016). According to Boag, modern technology use is a symbol for people to be considered as having higher social status than those who rarely or hardly use modern technological outcomes, saying that "Either way, our use of technology says something of our character and helps define us". Therefore, the following hypothesis has been developed:

H7: Image (I) has a significant influence on the behavior intention of customers to use e-payment systems.

V. Conceptual Framework

Based on the discussion of the finding from both the theoretical and empirical studies indicated in the preceding sections, several constructs have been identified by researchers to affect the adoption of e-payment systems either directly or indirectly. Making this evidence as a starting point, this study adopted the following conceptual framework in line with the hypotheses.



Source: Adapted from Venkatesh *et al.* (2012).

Fig. 4: Conceptual framework

VI. Methodology

The deductive research approach was employed in this study where the researcher started from an existing model of the UTAUT2 and then deductively went down by developing seven hypotheses generated from the model to test whether the constructs stipulated in the model could support the general theory under consideration. In this study, the researcher employed the quantitative method, where he tried to critically examine the link between the variables mainly in the UTAUT2 model using numerical (statistical) data and procedures. And he inferentially deduced the information that was quantitatively generated into the population from which the sample was taken.

A. Sampling Design

The population of this study was those individuals in Addis Ababa who are believed to be potential users of electronic payment systems, as operationally defined in the preliminary part of this paper, to settle their transactional activities or transfer payments. The researcher decided to focus on the mentioned population believing that the city had comparatively more advanced technologies, e-payment infrastructure, and thus more penetrations of the e-payment services than any other parts of the country (Wondwossen and Tsegai, 2005; UNCTAD, 2001).

B. Sampling Procedure and Sample Size

Tekabe and Gadise (2016) have put that when there is an infinite sample frame for a study and when the population size is greater than 50,000, the following formula developed by Cochran (1977) is used to determine the sample size. The total population of Addis Ababa for the year 2019 was estimatedto be 4.592 million and from this amount, the number of children between the age of 0-14 years was 43.21% (1,894,203) by the Central Intelligence Agency (2019). When the number of those under the age of 14 was deducted from the total population, assuming that they were not mature enough and eligible to use the e-payment systems and that the financial institutions require at least 18 years of age to own a bank account, the remaining number of potential e-payment users were calculated to be 2,607,787, which wasgreater than 50,000. This ledthe researcher to use the following formula.

$$n = \frac{(1.96)(^2 0.5)(1-0.5)}{(0.05)^2} \sim \underline{385}$$

Therefore, the data collection instrument was administered conveniently to the sample of 385 respondents.

C. Sources of Data and Instrument

Structured questionnaires containing 34 items were distributed to the respondents and sometime could fill in each item before

the responses were collected. Survey questionnaires were used in this research to elicit the required data from the samples. The questionnaires for this study were adopted from previously tested and used sources, mainly from Venkatesh *et al.* (2012), as the study adaptedconstructs mainly from the extended UTAUT2 model. The questionnaires consisted of items with five-point Likert scale options (strongly disagree through strongly agree) to let the respondents rank their levels of agreement.

The inferential analysestests of normality, reliability, multicollinearity, correlation, and regression were used as main analysis methods to check the relationship of the seven independent variables hypothesized to have influences on intention to use e-payment services because this kind of analysis is more preferred for a study having more than two independent variables (Adams *et al.,* 2014; Saunders *et al.,* 2009). The Pearson product-moment correlation coefficients were used to test the correlation of the variables.

VII. Results and Discussion

Given that the required tests as a prerequisite for running regression analysis were performed and the results showed that they well satisfied the minimum requirement as indicated in the preceding section of this paper, the next section presents the results obtained by performing the regression analysis. This section depicts the elements of linear regression analysis to see the quantitative relationships between the independent variable considered in this study (Performance Expectancy, Effort Expectancy, Facilitating Conditions, Price Value, Hedonic Motivation, and Image) and the dependent variable (Intention to Use E-payment Services).

Table I: Regression Coefficients

Coefficients[a]					
Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	1.414	.210		6.717	.000
Performance Expectancy	.202	.049	.228	4.112	.000
Effort Expectancy	.072	.046	.084	1.577	.116
Social Influence	.080	.044	.096	1.807	.072
Facilitating Conditions	.124	.049	.153	2.563	.011
Price Value	.103	.044	.131	2.326	.021
Hedonic Motivation	.066	.041	.087	1.611	.108
Image	.082	.037	.108	2.192	.029
a. Dependent Variable: Intention to Use E-payment Services					

Source: Researcher's survey, 2020.

Table I above presented the regression coefficients which were used to identify how much each independent variable contributes to the dependent variable and helped to develop the model's regression equation. It depicted that the constant value was 1.414, PE=0.202, EE=0.072, SI=0.800, FC=0.124, PV=0.103, HM=0.066 and IM=0.082. The highest and lowest contribution values of Performance expectancy and Hedonic Motivation, respectively. From these values of each independent variable's coefficient, the regression model was developed as follows:

Intention to Use E-payment Services = 1.414+0.202PE+0.072E E+0.080SI+0.124FC+0.103PV+0.066HM+0.082IM

However, among the entire independent variables, Performance Expectancy, Facilitating Conditions, Price Value, and Image were found significant, as indicated under the Sig. values of each being less than 0.05 (at 95% confidence level). Thus, the model's equation is re-written as:

Intention to Use E-payment Services = 1.414+0.202PE+124FC +0.0.103PV+0.082IM

A. Hypothesis Testing

The researcher had developed seven hypotheses derived from the model of UTAUT2 to check whether these seven predictors (Performance Expectancy, Effort Expectancy, Social Influence, Facilitation Conditions, Price Value, Hedonic Motivation, and Image) had significant relationships with the intention to use e-payment services. The researcher compared these hypotheses against the p-values analyzed using the regression method. Therefore, the hypotheses were tested as follows:

H1: Performance Expectancy has a significant influence on the intention of customers to use e-payment systems.

Based on the results presented in Table I, Performance Expectancy generated a p-value of 0.000, which was less than 0.05 at 95% confidence level. Therefore, the hypothesis was accepted, and it was confirmed that Performance Expectancy had a positive significant effect on intention to use e-payment services. That is, a one percent change in Performance

Expectancy resulted in a 22.8% change in people's intention to use e-payment services.

H2: Effort Expectancy has a significant influence on the intention of customers to use e-payment systems.

Based on the results presented in Table I, Effort Expectancy generated a p-value of 0.116, which was greater than 0.05 at 95% confidence level. Therefore, the hypothesis was rejected.

H3: Social Influence (SI) has a significant influence on the behavior intention of customers to use e-payment systems.

Based on the results presented in Table I, Social Influence generated a p-value of 0.072, which was greater than 0.05 at 95% confidence level. Therefore, this hypothesis was rejected.

H4: Facilitating Conditions have a significant influence on the intention of customers to use e-payment systems.

Based on the results presented in Table I, Facilitating Conditions generated a p-value of 0.011, which was less than 0.05 at 95% confidence level. Therefore, the hypothesis was accepted, and it was confirmed that Facilitating Conditions had a positive significant effect on intention to use e-payment services. That is a one percent change in Facilitating Conditions resulted in a 15.3% change in people's intention to use e-payment services.

H5: Price Value (PV) has a significant influence on customers' e-payment systems use intention.

Based on the results presented in Table I, Price Value generated a p-value of 0.021, which was less than 0.05 at 95% confidence level. Therefore, the hypothesis was accepted, and it was confirmed that Price Value had a positive significant effect on intention to use e-payment services. That is, a one percent change in Price Value resulted in a 15.3% change in people's intention to use.

H6: Hedonic Motivation (HM) has a significant influence intention of customers to use e-payment systems.

Based on the results presented in Table I, Hedonic Motivation generated a p-value of 0.108, which was greater than 0.05 at 95% confidence level. Therefore, this hypothesis was rejected.

H7: Image has a significant influence on the intention of customers to use e-payment systems.

Based on the results presented in Table I, Image generated a p-value of 0.029, which was less than 0.05 at 95% confidence level. Therefore, the hypothesis was accepted, and it was confirmed that Image had a positive significant effect on intention to use e-payment services. That is, a one percent change in Performance Expectancy resulted in a 10.8% change in people's intention to use e-payment services.

B. Discussion of Findings

The first factor that was found to have a significant influence on users' future plans for using electronic payment services was Performance Expectancy. This factor scored a uniquely significant contribution of explaining intention to use e-payment service with a beta value of 22.8% and $p<0.01$, other variables remaining constant. Facilitating Conditions was the next most significant factor in predicting the intention to use electronic payment services by users considered in this study. This construct had a power of unique significant contribution to explaining the intention of using electronic payments which is 15.3%.

This study also indicated that the Price Value construct had a direct significant relationship with the intention to use the electronic payment system with 13.1%, percent of unique affective contribution to the intention. In other words, the use of electronic payment technologies enables consumers, especially those who bear that actual payment of the expenses for using these systems, unlike those whom their employer organization pays for, is likely to save costs by using such technologies as also supported by (Venkatesh *et al.,* 2012).

Image or the symbol of social status was also the other factor found to be significant to influence customers' intention to use electronic systems for their payment settlements. According to the finding of this study, the construct had 10.8% of unique significant contributions to explain intention to use e-payment service. The studies from Gharaibeh *et al.* (2018) that was intended to examine the factors that influence the adoption of mobile banking in Jordan also confirmed that mobile banking was a symbol for status among members of a given community.

On the other hand, Effort Expectancy, Social Influence, and Hedonic Motivation found to be insignificant in this study. Effort Expectancy had a p-value of 0.116, which was greater than 0.05. This result signifies that the construct did not have a significant contribution to explain the intention to use e-payment services. Zuiderwijk *et al.* (2016) also supported this idea by putting that expected users of a system think that the technology would be very difficult to learn and use no matter how useful the technology is.

In the similar manner, social influence was also revealed an insignificant effect in this study with a p-value of 0.72, which was just above 0.05. This is due to the fact that people want to keep their financial information confidential. This argument was also supported by Oliveira *et al.* (2014) and Huang and Kao (2015) stating that people are not that much influenced by other persons on whether they intend to use these services when it comes to financial services. Finally, the last construct which had insignificant explaining power of intention was Hedonic Motivation, which stands for the enjoyment or fun that can possibly be gained when a person uses a certain technological innovation.

VIII. Conclusion

Unlike several similar studies conducted abroad, this study disproved that the Effort Expectancy construct is insignificant though the descriptive analysis results revealed a higher mean value of responses. This insignificant result may be attributed

to lack of knowledge by the users on how using the systems reduce their efforts, as many of the promotions on the media do not demonstrate how easy they are to operate than to push customers to just subscribe to them. This may also be due to different barriers such as languages used on the systems being only English or Amharic. The other insignificant predictor in this study was hedonic motivation, which represents the enjoyment users possibly derive from using the technology. This factor is most significant in contexts where the technology is related to games, distance learnings, etc., as evidenced by Venkatesh *et al.* (2012) and Jakkaew and Hemrungrote (2017), rather than those technologies related to financial issues.

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