THE INTERNATIONAL JOURNAL OF HUMANITIES & SOCIAL STUDIES

Effect of E-Money as a Monetary Alternative Mechanism to the Dollar in Ecuador 2014-2017

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Abstract
The purpose of this article is to describe the incidence of electronic money as an alternative monetary mechanism to the dollar in Ecuador period 2014-2017 and what have been the experiences in other countries. Likewise, the adoption of the same in Ecuador is evaluated. The research aims to give a visualization of the behavior of electronic money in the monetary circulation. The theorical support lies on the theories of " (Turowski & Pousttchi, 2004), (Herzberg, 2003), (Kite, 2004)*&* (Van den Dam, 2005) (Berger, Hancock, & Marquardt, 1996) (Humphrey, Willesson, Bergendahl, & Lindbolm, 2006) (Humphrey & Vale, 2004.) *among others. Finally, the research design is integral correlation. As a conclusion,   t was obtained that this case, the introduction of electronic money, had a positive impact on the money circulation as an alternative monetary mechanism to the dollar in Ecuador during the period 2014-2017.*

Keywords: Electronic money, technology, communication and mobile payment

1. Introduction

Since its inception approximately 150 centuries ago, an instrument of exchange such as money has been subject both in its form and in its modus operandi to changes. These changes have had an impact on the way the economy works. Giving money a strategic position in economic activities, so it is not surprising to see changes in the monetary process that have important repercussions in terms of credit, production and exchange. This is essentially indisputable when new forms of money take force as a means of payment. Nowadays, a dilemma is developing to introduce electronic money to replace paper money. At the global level, it seeks to gradually replace credit cards, bank notes, bank checks and funds transfers by electronic payments (electronic money). The adoption of this mechanism makes sense given that the growth of electronic commerce pressures the stimulation of online payments that multiplies the use of the internet as a virtual market due to its transactional applications. In the Ecuadorian case, the adoption by the Central Bank of Ecuador ECB of electronic money has an incidence of being an alternative monetary mechanism to the dollar period 2014-2017. It is not a monetary substitution as a monetary means to date. The importance of this research is based on being able to determine the Incidence of Electronic Money as an alternative monetary mechanism to the dollar in Ecuador period 2014-2017, and its behavior in the economic environment has as a first step to review its introduction in the monetary circulation. For this purpose, the behavior will be analyzed through the months since its adoption and to show the incidence of the same in the country. In addition, it will be evidenced in theoretical terms of new payment mechanisms adopted in other countries to know their experiences during their establishment.

2. Desarrollo

2.1. Evolution of Electronic Monetary Systems over Time

"Mobile payments have been a difficult topic to analyze and to implement due to the complexity of the multi-sided markets that underlie the payment solutions". (Rochet & Tirole., 2003). The complexity in the implementation of this means of payment as an alternative to fiduciary money, which presents different experiences in its application in different economies such as Africa, USA and France. Likewise, (Karnouskos, 2004) y (Mobile Payment Forum, 2002)who consider that the basic essence of a mobile payment is any payment where a mobile device is used to initiate, authorize and confirm an exchange of financial value in exchange for goods and services.

Therefore, the electronic monetary payment is. "it is a type of electronic payment transaction procedure in which at least the payer employs mobile communication techniques in conjunction with mobile devices for the initiation, authorization or realization of payment" (Turowski & Pousttchi, 2004); para, (Herzberg, 2003), (Kite, 2004)& (Van den Dam, 2005)mobile devices include mobile phones, PDAs, wireless tablets, and any other device that can connect to mobile telecommunications networks and enable payments to be made.

However, the complexity of mobile payment platforms requires the adoption of a multi-perspective (Dahlberg, Mallat, Ondrus, & Zmijewsk, 2008)and dynamic approach (Ondrus, J; Pigneur, Yves, 2006)to evaluate them and put them into practice. Therefore, the aim is to try to measure the reduction of the fiduciary monetary mass following the introduction of electronic money, and to examine its evolution in its inclusion. The issue of currency substitution or among the payment instruments is also the center of debates in Ecuador about the future of electronic purse, and in the regional sphere to relate it in its acculturation in society.

2.2. Comienzos Del Dinero Electrónico

It would be about "The creation of this new form of currency is intended not only to create a revolution in the way of generating and mobilizing money, but would bring much deeper changes in societies" ("Virtual Currency Schemes", 2012, pág. 13). A high percentage of commercial transactions in the world are paid through virtual payments such as credit cards, debit cards and interbank electronic transfers such as the United States through the Automated Clearinghouse. (NACHA, 2017) "The ACH Network supports more than 20 percent of all electronic payments in the U.S.". Therefore, its influence on electronic payment systems is high.

However, traditional forms of paper money still offer users certain unique advantages. For example, cash money ensures tradability, making it the most agile form of exchange. Cash denominated in "hard", and taking as an example: currencies are also popular in places where local money is not trustworthy (for example, dollars in Latin America or euros in Europe). Also, the other dominant form of paper money namely and controls as support, is sustained by the demand for deposits in banks. Which continues to be the preferred form of cash payment among consumers? In the same way, checks have become familiar, being widely accepted for more than a century around the world.

2.3. Sistemas Electrónicos Monetariosa Nivel Internacional

La Porte-monnaie électronique PME (Sitruk, 2008)« La monnaie électronique est une nouvelle forme de monnaie. C'est la raison pour laquelle elle a fait l'objet d'une règlementation particulière au plan européen, transposée au droit bancaire et financier au plan national ». In France, La porte- monnaie électronique (PME) is one of the electronic payment instruments that in corporates rechargeable virtual money units to make payments in different consumer establishments. This means of electronic payment did not have many years of demand and lost incidence over time.

2.4. M-Pesa

In Kenya, given the need to generate economic dynamism, M-Pesa was adopted, a service operated by the Safaricom mobile telephone network in that country, allowing users to make deposits of money in their telephone accounts. In the same way, transfer it electronically to another user by means of a simple text message and withdraw cash to one of the thousands of points of sale all over the world. As a result, its citizens consider this system to be safer, cheaper and faster than the money transfer systems it replaced."M-Pesa is primarily a money transfer system" (Mbiti & Weil, 2013). In the last 9 years since its adoption, M-Pesa has achieved a remarkable penetration in the Kenyan economy

2.5. Google Wallet

In the US, 2011, Google launched a mobile payment system called Google Wallet, "This mobile app uses a chip in the phone so it can be waved in front of payment stations to buy things." (Boehret, 2011). Initially available for Nexus S 4G smart phone users with platform NFC (Near Field Communication) "is a technology that enables a device to communicate with another at a maximum distance of around 20cm or less." (Curran, Millar, & Mc Garvey, 2012), This technology allows bidirectional data exchange between mobile devices. In this way, the Smartphone acts as a debit or credit card (e-wallet). At the beginning in the application of this payment mechanism had as promoter the signing of Master card credit card, but American Express, Discover and Visa were associated in the short term as well.

In this way, Google Wallet works with MasterCard Pay pass payment terminals with NFC technology. Although, to access the application, it is necessary to enter a PIN and pass the mobile phone near the payment terminal.
Finally, this service was extended to other mobile devices, but this payment mechanism is still in progress.

2.5.1. Apple Pay

Apple Pay is a payment service created by Apple and released in 2014. The service allows I Phone users to pay for their purchases using NFC technology "enabled smart phone users can make transactions and access information with only a simple touch" (Sharma, Gusain, & Kumar, 2013). According to (Ondrus & Lyytinen , 2011) "Apple has definitely strengths that can be exploited to offer a mobile payment services for IOS device users". This electronic payment system used to make purchases in iTunes, which has high expectations of acceptance in the medium term.

2.6. Electronic money in Ecuador

Through Resolution No. 005-2014-M, in ordinary session held on November 6, 2014, the Political and Monetary and Financial Regulation Board conceptualizes electronic money as: "It is the electronic means of payment, previously managed by the ECB, denominated in United States dollars in accordance with the provisions of the Organic Monetary and Financial Code" (Junta Regulación Monetaria, 2014). In addition, in the same document, it resolves that. "it is exchanged only through electronic, mobile, electromechanical, fixed devices, smart cards, computers and others, products of technological advance ". (Junta Regulación Monetaria, 2014)

In the same way, The Central Bank of Ecuador (ECB) defines electronic money as follows: "is the set of: operations, mechanisms, procedures and regulations that facilitate flows, storage and transfers in real time, between different economic agents, through the use of: electronic devices, electromechanical, mobile, smart cards and others that are incorporated , product of technological advance" (BCE, Banco Central del Ecuador, 2014). Likewise, in 2014 the ECB closed the signing of agreements with public and private entities for the development of the pilot plan for the implementation of the electronic money system, and with the providers of mobile telephony in the country (CNT, Claro and Movistar). For this plan"was attended by 800 users from 7 cities in the country, which tested the services of uploads, downloads, payments from person to person, collections of shops and consultations." (BCE, Banco Central del Ecuador, 2014a).

For the SRI Internal Revenue Service, electronic money is "a means of electronic payment, implemented by the Central Bank of Ecuador, whose support is physical money. Who wants to access this system must open a cash account from your cell phone (electronic money), through your mobile phone." (Servicio de rentas internas, 2016)

Also, the (SRI, 2016)indicates that "the cost of paying taxes with electronic money in the case of natural persons the cost per transaction is $ 0.05 and for legal persons it is $ 0.20 ".

3. Materials Methods

The research methodology will be defined by the type of analysis that will be applied. In the first instance we proceeded to perform a parametric test such as simple linear regression. The monetary circulation was considered as dependent data and as electronic money for its testing. The reason for simple linear regression "Its approach employs integral correlation, which provides an estimate of spatial dependence over time. Consider two series stationary and weakly dependent on time" (Alexakis & Siriopoulos, 1999)where each of the considered were evidenced their location in time. The time parameter started in October 2014 until April 2017. For (Lind, Marchal, & Wathen, 2015)"the linear relationship between two variables when finding the correlation coefficient." The variables used in the study must construct an equation that determines their association between them. It is also considered a correlation where for Bernal (2016) "Correlational research tries to examine the relationship between variables and their results, but at no time explains that one is the cause of the other" (pág. 113). That is, it is intended to determine if the incidence of electronic money had a positive demand or a negative demand within the monetary currency.

4. Datos

The data to carry out this research will be taken from the weekly Monetary Bulletin No. 527 of March 10, 2017 of the Central Bank of Ecuador that details the monetary panorama of the country, it takes into consideration monthly data from the adoption of electronic money as part of the currency monetary policy beginning in September 2014 until the research date March 10, 2017 so that you can observe the fluctuations that have occurred during these periods. Attached Table No. 1 Monetary Circulating (BCE, Banco Central del Ecuador, 2017)

Periodos	E.1 Circulación Monetaria (E.1.1 + E.1.2- E.1.3)	E.1.1 Emisión Monetaria	E.1.2 Dinero Electrónico (4)**	E.1.3 (-) Caja Bancos Privados
Sep-14	87,6	87,6	0,0	0,0
Oct-14	88,2	88,1	0,1	0,0
Nov-14	86,7	86,6	0,1	0,0
Dic-14	87,5	87,4	0,1	0,0
Ene-15	87,3	87,1	0,3	0,0
Feb-15	86,6	86,1	0,4	0,0
Mar-15	86,7	86,2	0,5	0,0
Abr-15	87,5	86,9	0,6	0,0
May-15	87,4	86,8	0,6	0,0
Jun-15	87,2	86,5	0,7	0,0
Jul-15	86,2	86,2	0,0	0,0
Ago-15	87,9	87,2	0,8	0,0
Sep-15	87,6	86,8	0,8	0,0

Periodos	E.1 Circulación Monetaria (E.1.1 + E.1.2- E.1.3)	E.1.1 Emisión Monetaria	E.1.2 Dinero Electrónico (4)**	E.1.3 (-) Caja Bancos Privados
Oct-15	87,3	86,5	0,8	0,0
Nov-15	87,0	86,3	0,8	0,0
Dic-15	85,7	84,9	0,8	0,0
Ene-16	84,8	84,0	0,8	0,0
Feb-16	84,2	83,4	0,8	0,0
Mar-16	84,7	83,9	0,8	0,0
Abr-16	84,7	83,8	0,9	0,0
May-16	84,5	83,4	1,1	0,0
Jun-16	85,6	84,1	1,5	0,0
Jul-16	86,6	85,0	1,6	0,0
Ago-16	88,1	85,2	2,9	0,0
Sep-16	89,1	86,1	3,1	0,0
Oct-16	89,8	86,0	3,8	0,0
Nov-16	92,3	88,2	4,1	0,0
Dic-16	94,1	89,2	5,0	0,0
Ene-17	95,6	89,5	6,1	0,0
Feb-17	95,5	89,4	6,1	0,0
Mar-17	95,5	89,4	6,1	0,0

Table 1: Monetary Circulating
Fuente: (BCE, Banco Central del Ecuador, 2017)
Elaborado Por: Los Autores

4.1. Hypothesis
- H0: The introduction of electronic money had no impact on the monetary circulation as an alternative monetary mechanism to the dollar in Ecuador 2014-2017 period
- H1: The introduction of electronic money had a positive impact on the monetary circulation as an alternative monetary mechanism to the dollar in Ecuador 2014-2017 period.
- H2: The introduction of electronic money had a negative impact on the monetary circulation as an alternative monetary mechanism to the dollar in Ecuador 2014-2017 period, that is, there was growth in it.

5. Results

5.1. Statistic Analysis
        In order to analyze whether or not there is a relationship between the variables and to determine whether a positive or negative incidence existed, a simple linear regression model will be used to obtain the correlation value R2. For this, the statistical package SPSS was used. In obtaining an equation of the line from the point cloud formed by the variables of monetary circulation affected by the changes that are generated by the evolution of electronic money and how they are associated in recent periods to perfection. The equation of the line is:
Y = 85.56+1.49*xthat is to say,
Circulación Monetaria = 85.56+ 1.49*(Dinero electrónico)
Attached Figure No 1. The relation of electronic money in the monetary circulation. In this figure it can be shown that there is a positive relationship. The increase in the monetary currency through time has been parallel with the issuance of electric money proportionally.
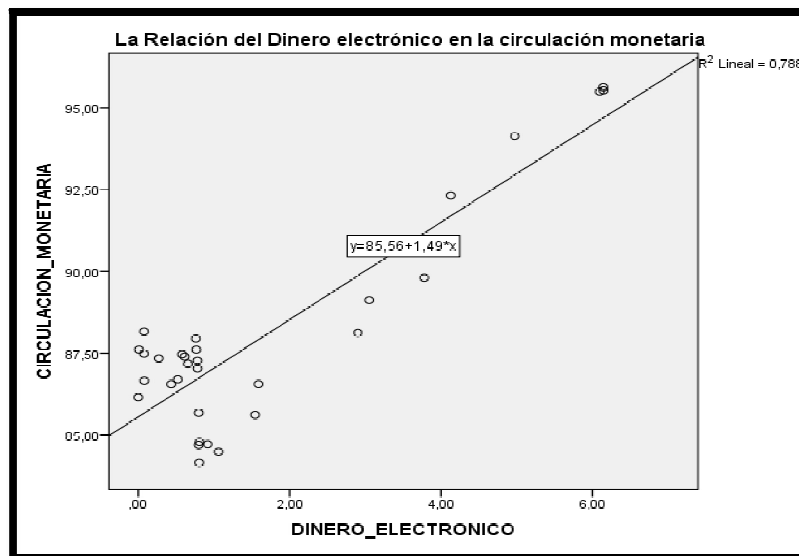
Figure 1

Note: 31 corresponding observations were used from September 2014 to March 2017. The data were taken from the Central Bank of Ecuador ECB Monetary bulletin.

In the same way, it was evaluated through the correlation test, which is very high with 0.88 of association and its level of significance is acceptable. It can be seen in table No.2 of Correlations. That is to say that electronic money is highly related to the increase in money circulation. On the other hand, the coefficient of the regression model the t-score indicates that the variable taken into account contributes significantly to the prediction model, the obtained value is generalizable to the population where t = 10,395. Attached table No 3. Coefficients

Also, by means of the test of the assumptions, it is tried to determine if the collinearity exists, In fact, it is sought that the factors are close to 1 the inflated variance factor (F / V) that indicates if there is multicollinearity between the variables. No value can be above 10, under this criterion there would be multicollinearity. As a result, it is 1, multicollinearity does not exist. Table No. 3 Coefficients is attached.

Correlaciones		Dinero_Electronico	Circulacion_Monetaria
Dinero_Electronico	Correlación De Pearson	1	,888**
	Sig. (Bilateral)		,000
	N	31	31
Circulacion_Monetaria	Correlación De Pearson	,888**	1
	Sig. (Bilateral)	,000	
	N	31	31

Table 2: Correlations
*** The Correlation Is Significant at the 0.01 Level (Bilateral)*

Coeficientesa							
Modelo		Coeficientes no estandarizados		Coeficientes Estandarizados	T	Sig.	Estadísticas De Colinealidad	
		B	Error estándar	Beta			Tolerancia	VIF
1	(Constante)	85,557	,363		235,609	,000		
	Dinero_Electronico	1,487	,143	,888	10,395	,000	1,000	1,000

Table 3: Coefficients
A. Dependent Variable: Movement Monetary

For the construction of the linear regression model, it is considered as an independent or input variable, which will allow evaluating its incidence in the dependent variable that would be the monetary Circulation. Table No. 4 is attached. Input variables

Variables Entradas/Eliminadasa			
Modelo	Variables Entradas	Variables Eliminadas	Método
1	Dinero_Electronicob	.	Entrar

Table 4
A. Variable Dependiente: Circulacion_Monetaria
B. Todas Las Variables Solicitadas Introducidas

Also, the Durbin-Watson test score indicates that there is no error independence (0.232). For the regression model tested with an independent variable, it is explained that 78.8% of the variance of the dependent variable (R squared: .788). Monetary circulation can be explained by the predictors in this case the electronic money variable. Attached Table No. 5 Summary of the model.

Resumen del modelob					
Modelo	R	R Cuadrado	R Cuadrado Ajustado	Error Estándar De La Estimación	Durbin-Watson
1	,888a	,788	,781	1,52027	,232

Table 5: Summary of the Model
A. Predictores: (Constante), Dinero_Electronico
B. Variable Dependiente: Circulacion_Monetaria

In the ANOVA model to see the prediction of the dependent variable and its level of significance is below $p < 0.001$ and the prediction of the dependent variable in F is 108.064. That is to say that the prediction model is partially accepted. Table No. 6 ANOVA is attached.

ANOVAa						
Modelo		Suma De Cuadrados	Gl	Media Cuadrática	F	Sig.
1	Regresión	249,762	1	249,762	108,064	,000b
	Residuo	67,026	29	2,311		
	Total	316,787	30			

Tabla 6: Anova
A. Variable Dependiente: Circulacion_Monetaria
B. Predictores: (Constante), Dinero_Electronico

Once the statistical results were found when running the linear regression model, it was considered necessary to determine if the data come from a normally distributed population, from which it was obtained:

Figure No.2 shows the data histogram and above this an almost normal curve, as you can see the data do not behave like a normal distribution; so it could be concluded that there is no normality. It has a positive bias (to the right).

To contrast this finding it was necessary to perform additional statistical tests to the graphic test presented in Figure No. 2
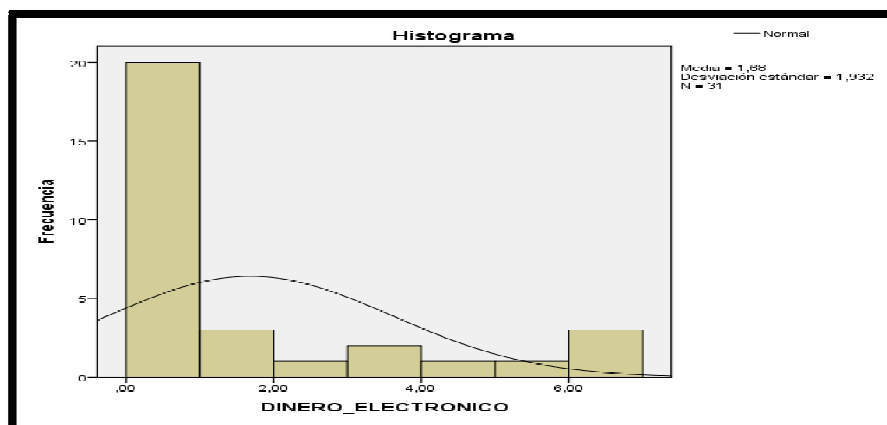

Figure 2: Frequency Histogram, to Determine Whether Or Not There Is a Normal Distribution in the Data One of Them Is the Kurtosis Test

Estadísticos		
Dinero_Electronico		
N	Válido	31
	Perdidos	0
Asimetría		1,415
Error Estándar De Asimetría		,421
Curtosis		,700
Error Estándar De Curtosis		,821

Table 7

In the same way, when analyzing the results obtained in the kurtosis test, it can be evidenced that when obtaining the alpha of 0.05 there is normality in the presented data. However, the value obtained in kurtosis was 0.700, considered a platicuric kurtosis. Therefore, the null hypothesis is rejected. In addition, to support the rejection of the null hypothesis, the Kolmogorov-Smirnov normality test was carried out.

Prueba De Kolmogorov-Smirnov Para Una Muestra		
		Dinero_Electronico
N		31
Parámetros normales[a,b]	Media	1,6806
	Desviación estándar	1,93243
Máximas diferencias extremas	Absoluta	,302
	Positivo	,302
	Negativo	-,192
Estadístico de prueba		,302
Sig. asintótica (bilateral)		,000[c]

Tabla 8
A. La Distribución De Prueba Es Normal.
B. Se Calcula A Partir De Datos.
C. Corrección De Significación De Lilliefors

In the results obtained, the test statistic yielded 0.302, which ratifies the rejection of the null hypothesis. Also, the level of significance to be less than p has been automatically rejected the null hypothesis that the introduction of electronic money had no impact on the monetary circulation as an alternative monetary mechanism to the dollar in Ecuador period 2014-2017.

Therefore, alternative hypothesis H1 is accepted, which the introduction of electronic money had a positive effect on the monetary circulation as an alternative monetary mechanism to the dollar in Ecuador 2014-2017 period.

6. Discussion and Conclusions

In the present investigation it was determined that there is an increasing incidence of electronic money in the monetary circulation over time since its adoption at the end of 2014. However, it was considered necessary to analyze similar cases in certain countries around the world where they applied monetary mechanisms parallel to the fiduciary money among them the one of M-pesa in Kenya, La Porte-monnaie électronique PME in France and in the United States with Apple pay and Google Wallet.

In economic studies such as (Berger, Hancock, & Marquardt, 1996) (Humphrey, Willesson, Bergendahl, & Lindbolm, 2006) (Humphrey & Vale, 2004.)Consider that "New payment technologies, such as electronic payments have replaced traditional paper-based methods and can potentially speed up settlement and reduce the financial costs of making payments for bank customers" So, for these authors, cash and checks are the most expensive means of payment for society, and it would be desirable to promote electronic payments, including those made with a debit card. Having in the first place, "The adoption of plastic cards for the payment of goods and services has led to a change in the meanings of everyday payments" (Singh, 2004). So, (Garcia Swartz, , Hahn, & Layne-Farrar, 2006)consider"the shift toward a cashless society appears to be a beneficial one".Where, this culture is born of the substitution of cash by credit card as a means of payment was created in the first instance until maturing as electronic money today. In these studies it can be concluded that the tendency to use electronic money is of a cultural and social nature, mitigating the cost of fiduciary money forms.

For the Ecuadorian case, the fundamental issue in its incidence is important for the development of electronic money, and in a more general way of electronic payment instruments, and it is considered economic, fiscal, socially; in the context of the nationalization of a monetary payment system. Finally, it should be mentioned that the study has limitations in that its tendency is not cultured in society, so it is considered important when other studies are published and compared with

the present investigation that determined a linear regression together with the other tests performed to compare the results obtained with more observations.

7. References

i. "Virtual Currency Schemes". (2012). 13.
ii. Alexakis, P., & Siriopoulos, C. (1999). The international stock market crisis of 1997 and the dynamic relationships between asian stock markets: Linear and nonlinear Granger causality tests. Managerial Finance (25), 22–38.
iii. Banco Central del Ecuador. (2016). Dinero electrónico.
iv. BCE. (Enero de 2014). Banco Central del Ecuador. Obtenido de Sistema de Dinero Electrónico en Beneficio de la Economía Popular y Solidaria: www.scpm.gob.ec/.../2. 6-Fausto- Valencia-BCE-Sistem
v. BCE. (2014a). Banco Central del Ecuador. Obtenido de Resolución Administrativa BCE-118-2014: https://www.bce.fin.ec/index.php/boletines-de-prensa-archivo/archivo/item/659-banco-central-expide-resolucion-sobre-dinero-electronico
vi. BCE. (10 de Marzo de 2017). Banco Central del Ecuador. Recuperado el 15 de Abril de 2017, de Boletin Monetario Semanal: https://contenido.bce.fin.ec/home1/estadisticas/bolsemanal/IndiceBMS.htm
vii. Berger, A., Hancock, D., & Marquardt, J. (1996). A framework for analyzing efficiency, risks, costs, and innovations In the payments system. Journal of Money, Credit, and Banking. , 28, 696-732.
viii. Boehret, K. (26 de Septiembre de 2011). Digital Solution: Google Wallet Lets You Pay With Your Phone. Wall Street Journal, Europe , pág. 29.
ix. Curran, K., Millar, A., & Mc Garvey, C. (2012). Near Field Communication. International Journal of Electrical and Computer Engineering (IJECE) , 2 (3), 371~382.
x. Dahlberg, T., Mallat, N., Ondrus, J., & Zmijewsk, A. (2008). Past, present and future of mobile payment research. A literature review. Electroic commerce research and applications , 7 (2), 165-181.
xi. Garcia Swartz, , D., Hahn, R., & Layne-Farrar, A. (2006). The move toward a cashless society: A closer look at payment instrument economics. Review of Network Economics , 5, 175–198.
xii. Herzberg, A. (2003). Payments and banking with mobile personal devices,. Communications of the ACM , 46 (5), 53–58.
xiii. Humphrey, D. B., & Vale. (2004.). Replacement of cash by cards in US consumer payments. Journal of Economics and Business (56), 211–225.
xiv. Humphrey, D., Willesson, M., Bergendahl, G., & Lindbolm, T. (2006). Benefits from a changing payment technology in European banking. Journal of Banking and Finance (30), 1631–1652.
xv. Junta Regulación Monetaria. (6 de Noviembre de 2014). Junta Regulación Monetaria . Obtenido de La Junta de Política y Regulación Monetaria y Financiera: https://www.juntamonetariafinanciera.gob.ec/PDF/Resolucion%20No.%20005-2014-M.pdf?dl=0
xvi. Karnouskos, S. (2004). Mobile payment: a journey through exiting procedures and standardization initiatives. IEEE Communications Surveys and Tutorials , 6 (4), 44–66.
xvii. Kite, S. (2004). Electronic payments: turning a cellphone into a mobile wallet; A hit overseas, digital-content downloads are becoming hot credit vehicles in the US thanks to firms like Valista and Qpass. Bank Technology News , 17 (10).
xviii. Lind, D., Marchal, W., & Wathen, S. (2015). Estadistica aplicada a los negocios y la economía (Décimosexta ed.). México: The McGraw-Hill.
xix. Mbiti , I., & Weil, D. (2013). The Home Economics of E-Money: Velocity, Cash Management, and Discount Rates of M-Pesa Users. American Economic Review: Papers & Proceedings , 103 (3), 369–374.
xx. Mobile Payment Forum. (December de 2002). Enabling secure, interoperable, and user-friendly mobile payments. Recuperado el 6 de Enero de 2017, de Mobile Payment Forum: www.mobilepaymentforum.org/info/mpf_docs/mpf_white-paper.pdf
xxi. NACHA. (14 de Enero de 2017). NACHA, The electronic payment solutions. Obtenido de https://www.nacha.org/ach-network/timeline
xxii. Ondrus, J., & Lyytinen , K. (2011). Mobile payments market: Towards another clash of the Titans?. In Mobile Business (ICMB), 2011 Tenth International Conference (págs. 166-172). IEEE.
xxiii. Ondrus, J; Pigneur, Yves. (2006). Towards A Holistic Analysis of Mobile Payments: A Multiple Perspectives Approach. Electronic Commerce Research and Applications , 5 (3), 246-257.
xxiv. Rochet , J., & Tirole., J. (2003). Platform competition in twosided. Journal of the European Economic Association , 1 (4), 990–1029.
xxv. Servicio de rentas internas. (20 de Septiembre de 2016). Obtenido de SRI: http://www.sri.gob.ec/web/guest/dinero-electronico
xxvi. Sharma, V., Gusain, P., & Kumar, P. (2013). Near field communication. Conference on Advances in Communicaton and Control System. Uttarakhand: Department of Computer Science & Engineering Tula's Institute, The Engineering and Management College Dehradun .

xxvii. Singh, S. (2004). "Imersonalisation of Electronic Money: Implications for Bank Marketing". International Journal of Bank Marketing , 22 (7), 504-521.

xxviii. Sitruk, H. (2008). Monnaie électronique, monnaie fiduciaire et monnaie scripturale. Quelles substitutions ? Quelles stratégies. Revue d'économie financière , 91 (1), 37-51.

xxix. SRI. (20 de Septiembre de 2016). Servicio de Rentas Interna. Obtenido de SRI: http://www.sri.gob.ec/web/guest/dinero-electronico

xxx. Turowski, K., & Pousttchi, K. (2004). Mobile Commerce: Basics and Techniques (Mobile Commerce: Grundlagen und Techniken), Springer,. Heidelberg, Germany: Springer.

xxxi. Van den Dam, R. (2005). Mobile payments: Cash, credit or phone? Total Telecom Magazine , 42–43.