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Investigating The Impact And Acceptance Of Blockchain In The Ticket Sale Industry Of The Premier Football League Of Iran

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ABSTRACT

Background: Match ticketing is one of the most important sources of income for clubs, and managers seek to use new methods to provide better services and deal with the problems of this industry, including the secondary market, ticket forgery, and the lack of Transparent control of the ticket sales cycle. Blockchain, a decentralized platform with many advantages, is a suitable option for ticket sales. The present study aims to investigate the impact of blockchain on the ticket sales industry of the Iranian Premier League matches and how it is accepted by football spectators.

Methods: The research type was applied, and in terms of collecting data, it was a library and field study to prepare the questionnaire (interviews with club managers, marketing managers, and IT specialists). Sampling was done from 384 football spectators. After checking the validity and reliability of the questionnaire, the frequency percentage of each option was calculated, and the one-sample t-test and Friedman's test were used to analyze the variables using SPSS 23.

Results: The reliability of the questionnaire was confirmed with Cronbach's alpha of 0.942, and with the Pearson Correlation test, the correlation coefficient was found optimal (R=0.878). Among the nine factors identified by the experts after the frequency and Friedman test, the most optimal option was to deal with the waste of the audience's time for a higher cost, and in the next rank, considering the VIP points for the audience and the elimination of the black market, and the lowest rank was given to familiarity and lack of trust in the blockchain.

Conclusions: The positive attitude of the spectators towards this method shows that due to the low familiarity and low trust in this technology, if the managers of the clubs implement the effective factors well, the spectators will be encouraged to buy tickets in this way.

KEYWORDS

Blockchain Technology, Iranian Football League, Ticket Sales

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Introduction

Football is one of the most popular sports in the world, and Iran is not apart from this reality [1]. The main core of football in the world are clubs, which are formed regularly as a system and provide the matches in the form of complete services and in the best way, and in this way, earn billions of dollars [2]. Professional clubs all around the world and for years have used various methods and ways, such as promoting commercial goods, attracting financial sponsors, selling players and sports products, as well as providing ancillary services and selling tickets, to prepare their resources and expenses [3]. The ticket is the permission of spectators to enter the stadiums, and its sale is one of the most important functions in most professional sports organizations because it constitutes a significant percentage of the income of that organization [4]. Approximately $12 billion is spent annually in the United States on sporting event tickets [5].

To make consumers feel better about the money they pay, ticketing should be organized and the tickets should be easily accessible to customers [6]. However, in practice, it always faces problems such as the existence of a secondary market, fake tickets, and lack of clarity in the ticket sales cycle. The problem of ticket fraud is not unimportant because an estimated 12 percent of ticket buyers commit fraud, costing an estimated $2 billion annually [7]. Ticket resale is also a growing business globally, generating $8 billion annually [8]. Consumers must rely on third parties when purchasing tickets on secondary markets and therefore face the risk of purchasing fraudulent or invalid tickets that are at risk of being canceled or void [9]. If the buyers' information is not secure, it can be easily misused.

With a brief look at the history, different methods, and tools in establishing security in communication, it can be stated that one of the latest technologies for protecting information in information-communication systems is blockchain technology [10]. The Internet of Things (IoT) leads to the next phase of human interaction with technology. Using technology provides high levels of security, privacy, authentication, and the ability to recover from hacker attacks. [11]. One of the fundamental drivers of transformation in various fields of technology is blockchain, which futurists refer to as one of the top 30 technologies of the current decade and the future of mankind [12]. The salient features of blockchain technology are immutability, automatic recording of events, and time stamps in the network, which have the most positive effect on reducing the cost of the control process and execution of transactions [13]. Other notable features of blockchain are high availability, reliability, pseudo-anonymity, security, flexibility, and maintaining integrity [14]. Its applications are endless, including stock control automation, digital voting, ticket sales, auditing, tax automation, payments, notary services, data storage, and digital identification [15].

The use of blockchain and artificial intelligence in the financial system has a positive impact on audit quality by assisting the audit process and fraud detection, which also improves financial reporting [16]. The capacity of the parties to the contract is one of the most important legal challenges of smart contracts [17]. Blockchain can act as a bridge to solve this problem and reduce legal disputes and increase trust in transactions between parties [18]. In a research in 2013, the researchers investigated the innovative model of online ticketing in a smart public blockchain. Online ticketing systems face the issue of eliminating counterfeit tickets and scalping while ensuring privacy protection and information openness. Another concern is ticket fraud: when duplicate tickets allow unauthorized entry and cost the host. An Ethereum-based ticketing DApp solves all these problems. Ticket holders may easily sell their tickets using the DApp [19]. In this research, we have examined the following two issues: effective factors in the application of blockchain technology in the ticket sales industry of Premier League football matches and the prioritization of these factors from the point of view of football spectators.

Material and Methods

The method of this research is mixed (qualitative and quantitative). The research is of applied type and the method of collecting data was library and field study. In this research, field study, interviews, and open questionnaires were used to find the most important and effective factors in the application of blockchain technology in the ticket sales industry of Iran's premier football league. Since the current research was conducted in two qualitative and quantitative parts, the statistical population and samples include two groups. The qualitative part included 12 managers of Premier League clubs, ticket sales and marketing experts, and IT experts, and the interview continued until the theoretical saturation of the subjects. In the quantitative part, the exact number of the target population was not clear, so according to Cochran's formula, the sample size was considered to be 384 people. The sampling method in the qualitative section was the purposeful sampling method using non-probability methods, which continued until theoretical saturation, and in the quantitative part, the cluster random sampling method was used to select subjects.

In the qualitative part, by studying the theoretical foundations and background of relevant research and semi-structured interviews with managers of Premier League clubs, ticketing and marketing experts, and IT experts, the effective factors and the adoption of blockchain in ticketing were identified. In the quantitative part, based on the components obtained from the interview, a questionnaire was developed based on a five-point Likert scale. The face validity of this questionnaire was examined based on the opinion of experts, and its reliability was calculated with Cronbach's alpha in a pilot test. First, the questionnaire was distributed among 80 samples in the pilot group, data was collected, and its reliability was calculated. Then, the data was collected from a main sample of 384 subjects, and confirmatory factor analysis was utilized to confirm the factors extracted from the questionnaire by using exploratory factor analysis. The reliability and other indicators, such as concurrent validity, were obtained by a single question in the questionnaire. Cronbach's alpha coefficient, split-half reliability were used in this step. A One-sample T-test and Friedman's test were used to test the research hypotheses through SPSS 23 software.

Results

Table 1 shows the quantitative results (content and face validity) of the initial questionnaire based on the opinion of 12 experts.

Table 1: content and face validity of the questionnaire based on the opinion of 12 experts

	Question	CVI	CVR	**Response**
1	Do you agree with buying tickets for football matches in the box office and traditional way?	0.87	0.87	accept
2	Are you ready to buy tickets non-present from the official website of the federation or club?	1	1	accept
3	Are you familiar with blockchain technology?	0.73	0.73	accept
4	Do you trust the ticket sales system through the official website of the federation with blockchain technology?	0.8	0.82	accept
5	Are you ready to buy football match ticket in blockchain along with points	1	0.96	accept
6	If you are awarded VIP for buying tickets with the blockchain method, are you willing to use this method in the amount of (50% + one) during a season of matches?	1	1	accept
7	If this method costs more for less waste of your time, do you agree to do it?	0.47	0.52	accept
8	Have you ever had to buy football tickets from the black market?	0.8	0.83	accept
9	If you can buy a ticket on the official site of buying and selling tickets from people who have already bought tickets and intend to sell them (without the existence of a black market,	1	1	accept

	in compliance with the price ceiling and with the assurance of not being fake), would you be willing to do this?

Table 2- Correlation of questions with total score

Item	Mean	SD	R	Item	Mean	SD	R	Item	Mean	SD	R
1	4.06	1.1	0.81	4	3.14	1.18	0.882	7	2.36	0.94	0.305
2	3.45	1.11	0.796	5	3.58	1.19	0.917	8	3.58	1.36	0.936
3	2.75	1.16	0.804	6	3.51	1.33	0.928	9	3.65	1.38	0.941

Table 3- The results of the factor loading of the questions

Item	Factor load	Item	Factor load	Item	Factor load
1	0.81	4	0.893	7	0.415
2	0.816	5	0.923	8	0.936
3	0.802	6	0.935	9	0.936
Special value	6.24				
Percentage of variance	78.07				
Cumulative variance percentage	78.07				

Table 4- The reliability results of the questionnaire

Mean	SD	Cronbach Alpha	Half split coefficient	Overall reliability
32.03	8.08	0.942	0.858	0.952

Table 5- Pearson correlation test results (n=383)

Variable	Overall score	
	R	Sig.
If there is a traditional ticket sale at the same time, would you like to buy a ticket in blockchain?	0.878	0.001

Table 6 shows the One-sample t-test results to investigate the situational analysis of the effective factors in the use of blockchain technology in the ticket sales industry of Iran's premier football league.

Table 6- One sample t test results

Factors	Descriptive data		One-sample t-test (value of the test = 4)			
	Mean	SD	T	df	Mean difference	Sig.
Do you agree with buying tickets for football matches in the box office and traditional way?	2.086	1.16	-15.35	382	-0.91	0.001

Are you ready to buy tickets non-present from the official website of the federation or club?	3.276	0.94	5.75	382	0.276	0.001
Are you familiar with blockchain technology?	2.668	0.82	-7.88	382	-0.331	0.001
Do you trust the ticket sales system through the official website of the federation with blockchain technology?	2.678	1.05	-5.96	382	-0.321	0.001
Are you ready to buy football match ticket in blockchain along with points	3.36	1.18	5.96	382	0.36	0.001
If you are awarded VIP for buying tickets with the blockchain method, are you willing to use this method in the amount of (50% + one) during a season of matches?	3.472	1.17	7.901	382	0.47	0.001
If this method costs more for less waste of your time, do you agree to do it?	3.488	1.15	8.305	382	0.488	0.001
Have you ever had to buy football tickets from the black market?	2.48	0.82	-12.38	382	-0.519	0.001
If you can buy a ticket on the official site of buying and selling tickets from people who have already bought tickets and intend to sell them (without the existence of a black market, in compliance with the price ceiling and with the assurance of not being fake), would you be willing to do this?	3.48	1.306	7.238	382	0.483	0.001

Table 7: Frequency and frequency percentage of effective factors in the use of blockchain technology in the ticket sales industry of Iran's premier football league

Item	**1**		**2**		**3**		**4**		**5**	
	F	P	F	P	F	P	F	P	F	P
1	145	37.9	138	36	43	11.2	36	9.4	21	5.5
2	15	3.9	56	14.6	150	39.2	132	34.5	30	7.8
3	34	8.9	107	27.9	199	52	38	9/89	5	1.3
4	49	12.8	124	32.4	133	34.7	55	14.4	22	5.7
5	32	8.4	54	14.1	114	29.8	110	27.8	73	19.1
6	30	7.8	41	10.7	113	29.5	116	30.3	83	21.7
7	27	7	41	10.7	116	30.3	116	30.3	83	21.7
8	45	11.7	140	36.6	172	43.9	21	5.5	5	1.3
9	34	8.9	64	16.7	80	20.9	93	24.3	112	29.2

F= Frequency
P= Percentage

Table 8: The results of Friedman's test to compare the prioritization of effective factors

Items and factors	**Ranking mean**	**Statistics**	**df**	**Sig.**

Do you agree with buying tickets for football matches in the box office and traditional way?	3.1	909.005	8	0.001
Are you ready to buy tickets non-present from the official website of the federation or club?	5.72			
Are you familiar with blockchain technology?	3.93			
Do you trust the ticket sales system through the official website of the federation with blockchain technology?	3.93			
Are you ready to buy football match ticket in blockchain along with points	5.89			
If you are awarded VIP for buying tickets with the blockchain method, are you willing to use this method in the amount of (50% + one) during a season of matches?	6.24			
If this method costs more for less waste of your time, do you agree to do it?	6.3			
Have you ever had to buy football tickets from the black market?	3.7			
If you can buy a ticket on the official site of buying and selling tickets from people who have already bought tickets and intend to sell them (without the existence of a black market, in compliance with the price ceiling and with the assurance of not being fake), would you be willing to do this?	6.19			

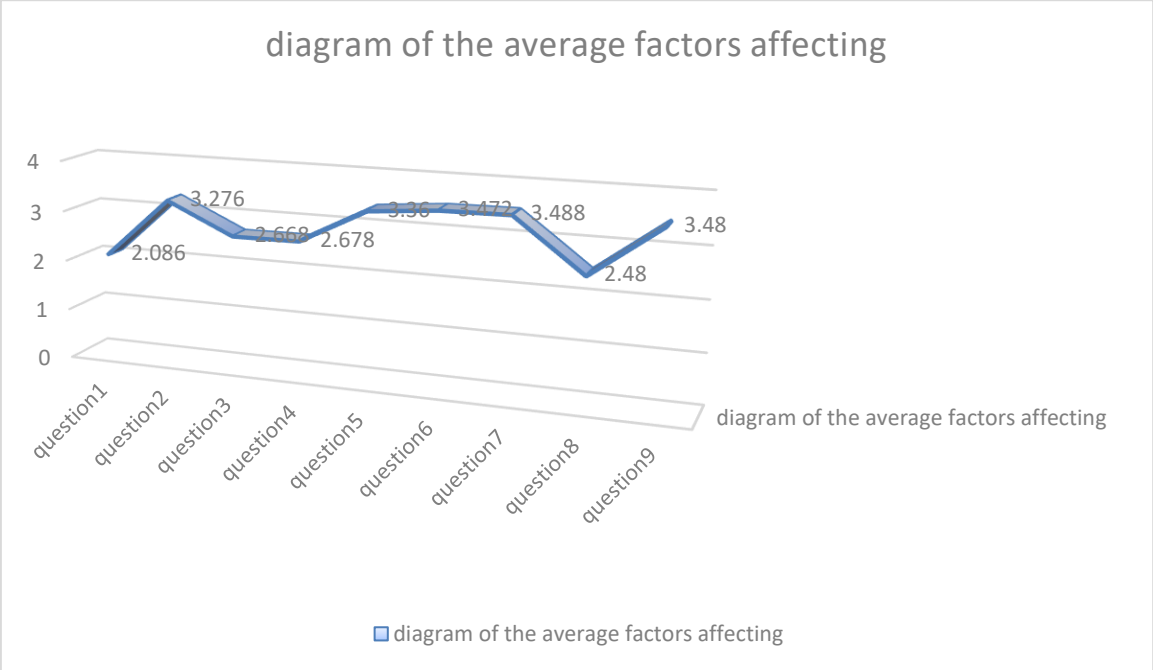

Diagram 1. Linear diagram of the average factors affecting the application of blockchain technology in the ticket sales industry of Iran's premier football league

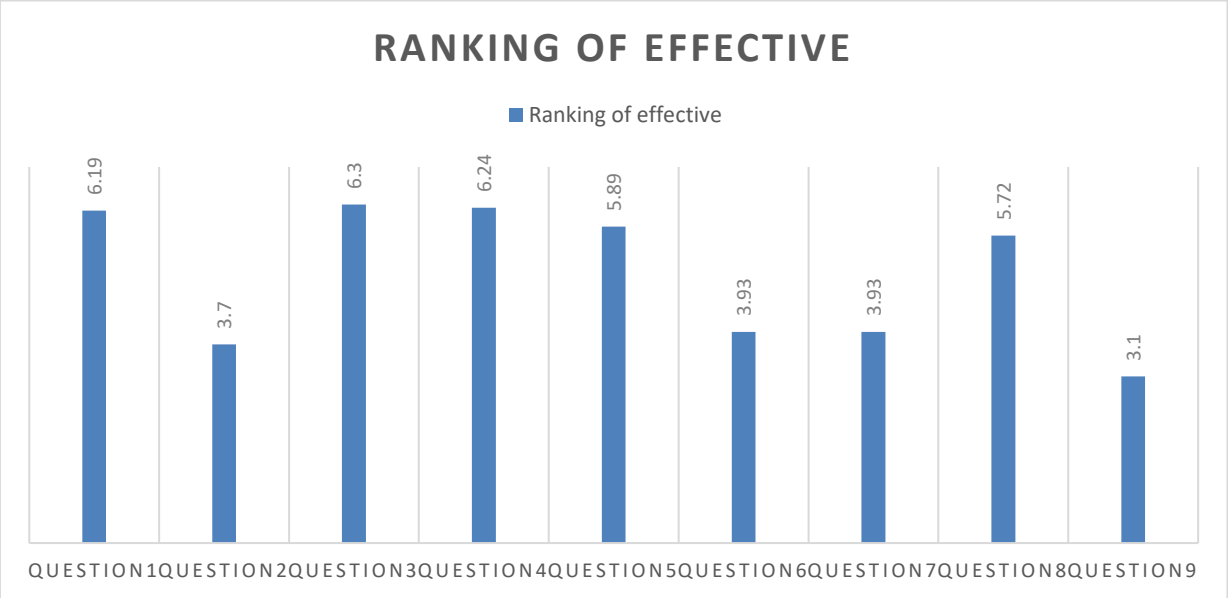

Chart 2- Ranking of effective factors in the use of blockchain technology in the ticket sales industry of Iran's premier football league

Discussion

The results show that if a VIP point is given to the participants, it will take them less time to buy tickets, and they can purchase tickets without the black market. They have agreed to buy tickets using blockchain technology, and these were important factors in this field. Although their trust and familiarity with blockchain technology is low, if the traditional sales conditions and blockchain are provided simultaneously, they are more inclined to use the blockchain method. The prioritization of the effective factors is as follows. First: (Item 7), Second: (Item 6), Third: (Item 9), Fourth: (Item 5), Fifth: (Item 2), Sixth: (Item 3), Seventh: (Item 4), Eighth: (item 8), and ninth: (item 1).

The findings showed a positive attitude towards the adoption of blockchain technology in ticket sales. Participants were willing to buy tickets based on blockchain, but under some conditions, which were identified as effective factors in this research, although they have less trust and familiarity with this system. This positive attitude is mostly due to the benefits that blockchain brings to ticket sales. As it is observed in the ranking of the effective factors in this research, we now know that it is easier to buy a ticket with more facilities, spend less time while preparing the ticket and presenting the ticket in the stadium, taking into account the conditions of security and greater transparency, respectively, which causes the audience to attract to this new method. Each of these factors can be improved and enhanced by the providers.

It should be noted that transparency and security are advantages of the blockchain system. It should be noted that transparency and security are advantages of the blockchain system, so if the spectators are encouraged to use this method for the facilities provided by the officials, the transparency and security advantages of this system will be implemented automatically over time and over time, the more the users will get to know and trust the method and will create mutual benefits for the audience and the clubs.

So far, we have found that football managers and spectators are against the existence of a traditional ticketing office, and managers are looking for new ways to update this method - and they are currently doing this electronically on the sites. The proposal of the technology world for them is blockchain technology. Now, according to the level of knowledge, familiarity, and trust of the audience in Iran towards this system, it is necessary to propose solutions to encourage the audience to use this method. The research conducted outside of Iran emphasizes the use of blockchain as a solution to the existing problems of the ticketing industry and has even tested the proposed platforms and reported the results of their effectiveness. In our research, because Iran is one of the countries where the growth rate of

using blockchain technology is very low, examining the acceptance of this technology was an important issue that was not paid attention to in other research. Also, the simultaneity variable was another difference between this research and other researches. With face-to-face interviews with football managers, marketing managers, ticket sales officials, and IT experts, we attempted to find out the most important part of the issue, which is getting to know this technology, how to start the process of buying tickets in this way, and ultimately building trust and continuing to use this technology

Conclusion

Spectators do not want to use traditional ticket offices and like to be offered tickets in a way that wastes less time and also eliminates the black and secondary markets. They are willing and interested in giving points from ticket providers in this method, although they are little familiar with this method and consequently have little trust in it. It is suggested that for the successful implementation of blockchain in the ticket sales industry, based on the findings of the research, the following four items be reviewed and carried out by the country's football managers, computer experts, and IT officials of clubs and organizations related to Iran's premier football league. First, designing VIP privileges and attractive gifts for users, second, specifying the amount of time saved for spectators - both during ticket purchase and when entering the stadium, third, preparing an educational video on how to buy and resell tickets and how to control its price, and fourth, preparation of a training video about the introduction of blockchain technology and its benefits for the audience from the country's official and legal sources.

In this research, different factors were introduced and analyzed to show the effect of this industry on ticketing for Premier League football matches. However, according to the questionnaire and its analysis, the factors that can be further investigated by others are exploring the ability to create the technical infrastructure of this technology in Iran, examining the legal conditions of this technology in Iran, and studying the appropriate platform on the blockchain platform that can provide the most benefits of this technology.

Compliance with ethical guidelines

As the corresponding author, I pledge that I have observed all ethical practices

Conflict of Interest

The authors declare that there are no conflicts of interest regarding the publication of this manuscript

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بررسی تاثیر و نحوه پذیرش بلاکچین در صنعت بلیت فروشی لیگ برتر فوتبال ایران

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چکیده

هدف: بلیت فروشی مسابقات از مهم ترین منابع درآمدی برای باشگاه ها می باشد و مدیران برای ارائه خدمات بهتر و مقابله با مشکلات این صنعت اعم از بازار ثانویه، جعل بلیت و عدم کنترل شفاف چرخه بلیت فروشی به دنبال استفاده از روش های نوین می باشند. بلاکچین بعنوان یک پایگاه داده غیر متمرکز با مزایای بسیار، پیشنهاد مناسبی برای بلیت فروشی می باشد. هدف مقاله بررسی تاثیر بلاکچین بر صنعت بلیت فروشی مسابقات لیگ برتر ایران و نحوه پذیرش آن توسط تماشاگران فوتبال است.

روش شناسی: تحقیق از نوع کاربردی است و اطلاعات به صورت کتابخانه ای و میدانی (مصاحبه با مدیران باشگاه ها ، مدیران بازاریابی و متخصصان آی تی) برای تهیه پرسشنامه گرد آوری گردید. نمونه گیری از ۳۸۴ نفره تماشاگران فوتبال انجام گرفت ، ابزار آماریspss۲۳ میباشد. پس از بررسی روایی و پایداری پرسشنامه از آزمونT تک نمونه ایی و آزمون فریدمن برای تحلیل و رتبه بندی عوامل تاثیر گزار استفاده گردید..

نتایج: پایایی پرسشنامه با الفای کرونباخ ۰/۹۴۲ مورد تایید قرار گرفت و با آزمون پیرسون ضریب همبستگی پرسشنامه در حد مطلوب بدست آمد (R=0.878) در میان ۹ عامل شناسایی شده توسط کارشناسان و خبرگان بعد از آزمون درصد فراوانی و فریدمن بهینه ترین گزینه مقابله با اتلاف وقت تماشاگران در قبال هزینه بیشتر، در رتبه های بعدی در نظر گرفتن امتیازات VIPبرای تماشاگران، از بین رفتن بازار سیاه قرار داشت و پایین ترین رتبه به آشنایی و عدم اعتماد به بلاکچین تعلق گرفت

نتیجه گیری: نگرش مثبت تماشاگران به این روش با توجه به آشنایی کم و اعتماد پایین نشان می دهد در صورتی که مدیران باشگاه ها عوامل موثر شناخته شده را به خوبی عملیاتی کنند تماشاگران ترغیب به خرید بلیت به این روش خواهد شد.

واژه‌های کلیدی

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