

# Predictors of Blockchain Technology Acceptance in Medical Imaging: The Mediating Role of Initial Trust

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## ABSTRACT

Blockchain technology (BCT) is an emerging technology that has been used mainly in supply chain and financial technology. However, the use of this technology in Medical Imaging (MI) is still limited. This study investigates the acceptability of BCT in MI in public hospitals in Iraq. Based on relevant theories, the study proposed that Effort Expectancy (EE), Performance Expectancy (PE), Social Influence (SI), and Facilitating Condition (FC) significantly affect the acceptability of BCT in MI. Similarly, EE, PE, SI, and FC are expected to affect Initial Trust (IT), which in turn is proposed to mediate the effect of EE, PE, SI, and FC on the acceptability of BCT in MI. Data were collected from 136 doctors from public hospitals in Iraq. The results indicated that EE, PE, and SI positively affected the acceptability of BCT in MI. EE and PE positively affected IT. Furthermore, IT positively affected the acceptability of BCT in MI and mediated the effect of EE and PE. The study offers valuable insights for both theoretical and practical implementations, can guide future research, and informs strategies for the effective acceptability of BCT in MI in public hospitals.

*Keywords-blockchain technology; medical imaging; UTAUT; expanded trust model; initial trust*

## I. INTRODUCTION

Blockchain Technology (BCT) is an emerging technology that has several beneficial potentials in many fields. BCT provides important advantages for healthcare and in particular for Medical Imaging (MI). BCT unifies and updates patient medical data and data from other sources. This can solve storage and accessibility challenges securely and efficiently [1]. BCT delivers cost-effective medical records with rapid and secure access [2]. BCT is significant for the healthcare sector because it has several advantages in terms of distribution, security, encryption, and tokenization [3]. The increased usage of digital data in MI, especially in radiology, requires new storage solutions [4]. Traditional methods of sharing medical images mainly used portable storage, such as compact discs (CD). These methods were slow, costly, and carried the risk of losing patient data. However, BCT enables a more secure,

flexible, and efficient method of sharing MI information [5]. BCT can also help reduce repetition and duplication, as well as exposure to MI radiation [6-7].

BCT also supports the integration between MI and other intelligent applications such as Artificial Intelligence (AI). It also enables conducting research, tracking medical devices, and monitoring teleradiology activities [5]. Anonymous records and participant identification allow individuals to regulate and decentralize MI exchange without central authorities [8]. Furthermore, integration between BCT and AI is a promising approach to enhance security and medical diagnosis [9]. Despite the obvious benefits, the application of BCT in MI is in its early initial stages. Previous studies focused on the use of BCT in healthcare without paying attention to MI [8]. Existing studies in this domain mainly focus on literature reviews and potential applications rather than adoption or acceptance [6, 9].

Previous studies focused mainly on the challenges and technical aspects of using BCT, while only a few studies examined the behavioral aspect and user perceptions, such as healthcare professionals [8, 10]. Therefore, more studies are needed to examine the use of BCT in MI from the perspective of medical professionals [11]. Several issues contribute to the lack of using BCT in MI by medical professionals. These include the low awareness and knowledge among medical practitioners about the use of BCT in MI, the persistent use of conventional techniques and systems, safety and security concerns, trust issues, and the perceived complexity of BCT [9]. The Unified Theory of Acceptance and Use of Technology (UTAUT) is one of the widely deployed models for explaining the use of a new technology. This model indicates that the use of technology depends on the level of benefits, such as Performance Expectancy (PE), the level of difficulty and complexity of the technology, known as Effort Expectancy (EE), the impact of important others, i.e. friends, family, peers, and experts, on the decision of an individual to use the technology, known as Social Influence (SI), and the established software, hardware, technical capability, and networks, known as Facilitating Condition (FC) [10, 12].

Based on this background, studies on the acceptance of BCT in MI are still limited, while user perceptions are a key factor in the use of BCT in MI [13]. This study uses the UTAUT model, which includes EE, PE, FC, and SI. The expanded trust model includes Initial Trust (IT) to fully explain the acceptance of BCT in MI by professionals. This study experimentally investigates these characteristics to better understand the acceptance of BCT by medical imaging professionals.

## II. LITERATURE REVIEW

### A. Theoretical Framework

This study uses an expanded trust model of UTAUT to explain the relationships among variables. UTAUT offers an underpinning framework to comprehend the intention and behavior of using BCT in MI, including the organizational and individual levels [14]. The first version of UTAUT combined eight technology models and identified four predictors of Behavioral Intention (BI), such as EE, PE, SI, and FC [15]. Researchers prefer UTAUT due to its explanatory power, which accounts for 70% of the variation in BI [15, 16]. A new version of UTAUT was developed, called UTAUT2 [17], which focuses more on customer perspectives and the marketing approach. This study uses UTAUT because it is more suitable to explain doctors' acceptance of new technologies in organizational settings. However, UTAUT has been criticized for not focusing on the social aspect [18]. Thus, UTAUT was expanded by integrating variables such as trust to improve its ability to explain the use of BCT [16].

Trust in technology is a multifaceted construct that extends beyond traditional notions. In [13], an expanded trust model was presented, where IT is a key concept, referring to the belief that technology possesses the necessary attributes to perform as expected in situations with potential negative consequences. This concept is particularly relevant in the context of BCT acceptance, where the user might exhibit a willingness to take

risks without prior experience or knowledge [19]. The formation of IT is influenced by various factors, including personality, environmental FC, PE, and SI. Considering the limited exploration of BCT in MI, the level of IT among healthcare professionals varies. Therefore, understanding and measuring IT becomes crucial in predicting the acceptance of BCT among healthcare professionals in the MI domain [20]. This study uses a trust-expanded model of UTAUT to explain the effect of EE, PE, SI, and FC on IT and the acceptability of BCT in MI. This model also explains the roles of IT as a predictor of accepting BCT in MI and as a mediator between UTAUT variables and acceptance of BCT in MI.

### B. Blockchain Technology (BCT)

BCT, a cornerstone of the fourth industrial revolution (IR 4.0), is recognized for its transformative potential. However, in healthcare, BCT implementations face complexity, requiring users to possess professional skills [21]. The adoption of BCT in healthcare requires significant change management, compounded by the inherent challenge of modifying behavior within the industry [22]. BCT is classified as public, federated, and private. Public BCTs are permissionless, federated BCTs are permissioned and operate under a consortium, and private BCTs are centralized in a governing organization [23]. The BCT architecture involves transactions that use hash values, which are combined into a hash tree. The component of each block is a hash tree as well as the hash of a previous block along with the timestamp [24].

BCT possesses several key characteristics that distinguish it in various applications [25]. A fundamental feature is decentralization, where data are stored without a single point of control, promoting a distributed and scalable system [26]. The technology ensures immutability, making transactions tamper-evident and unalterable once validated. Trust and traceability are maintained through transparent and decentralized databases, fostering a shared ledger accessible to all participants [27]. BCT efficiency is highlighted by its time-saving capabilities, providing almost real-time record-keeping for swift decision-making [28]. In the healthcare sector, BCT has applications in drug and pharmaceutical supply chains, electronic health records, remote patient monitoring, biomedical research, and education, showcasing its potential to enhance authentication, data privacy, and system flexibility while improving healthcare services [29, 30].

### C. Medical Imaging (MI)

MI holds a crucial place in diagnosis, therapeutic interventions, and the observation of the human body, contributing significantly to patient triage, disease management, and imaging-guided interventions [31]. The first inception of MI was discovered in 1895 by the discovery of X-rays [32]. However, contemporary challenges in this field include MI data overload, conventional storage methods, concerns about patient data security, resource scarcity, and a lack of knowledge and experience with BCT among medical professionals [4, 7]. Examples include image sharing, teleradiology, administrative tasks, supply chain tracking, and research and machine learning [8]. The emphasis on the transformative potential of BCT underscores the need for innovative solutions to address challenges in MI, with BCT

emerging as a promising avenue for positive transformations. Medical professionals face issues with MI storage, accessibility, and sharing [1]. Therefore, this study examines the usability of BCT to address these issues in public hospitals.

#### D. BCT Adoption Studies

Several have been conducted, particularly in the supply chain sector, using different theories. Several factors, derived from previous studies with varying results, have indicated the complexity of understanding the acceptance of BCT in different contexts [33, 34]. Limited studies investigated the acceptance of BCT in MI. The existing literature mainly focuses on potential applications, prototypes, and platform descriptions. Very few empirical studies examined the acceptance of BCT among healthcare professionals, particularly in the field of MI. Understanding the factors that influence acceptance in this context is critical to the successful implementation and deployment of BCT in MI information sharing [5, 6, 9]. Some studies investigated multiple factors influencing BCT adoption, including UTAUT variables (PE, EE, SI, and FC), TAM variables, and trust [12, 35]. Although the literature on BCT in healthcare is growing, the focus on MI applications remains relatively limited [5]. Many studies were conceptual or exploratory, presenting frameworks and discussing potential benefits rather than providing extensive empirical evidence or real-world implementations [6, 8]. Some studies often focus on the technical aspects of BCT integration, but there is limited exploration of human factors, such as the acceptance and usability of BCT among healthcare professionals. Furthermore, limitations and issues related to the use of BCT in MI have been highlighted in articles that call for more studies [9, 33, 36].

The literature review on the adoption of BCT in healthcare, specifically focusing on MI, revealed several critical research gaps. A significant research gap pertains to the underexplored empirical studies in healthcare adoption, where most of the existing research is in its infancy and relies heavily on systematic reviews [5, 36, 37]. The extension of UTAUT to the MI context emerges as another research gap. Although UTAUT is widely used to explain the acceptance of BCT in various sectors, its application in the specific MI domain remains unexplored [10, 12, 38]. Furthermore, the integration of UTAUT with other relevant theories, such as the expanded trust model, could provide a more comprehensive technological perspective, especially considering the importance of trust in BCT to enhance the predictive power of acceptance models [10, 12, 35, 38].

#### E. Conceptual Framework and Hypotheses Development

Based on UTAUT and the expanded trust model, this study hypothesizes that the impact of EE, PE, SI, and FC on the acceptability of BCT in MI is positive. The study also proposes that EE, PE, SI, and FC are significant in IT. Lastly, IT is hypothesized to affect the acceptability of BCT in MI and acts as a mediator between EE, PE, SI, and FC and the acceptability of BCT in MI. Figure 1 shows the conceptual framework.

##### 1) UTAUT Variables and BCT Acceptability

The UTAUT is one of the commonly used theoretical frameworks in studies investigating the adoption of BCT. PE is

a crucial aspect within this framework, which refers to the belief that the adoption of technological tools, such as BCT, enhances efficiency in task performance. In the context of MI, PE becomes essential, signifying the perception of maximum benefits that can be derived from the application of BCT in healthcare [6, 39, 40]. EE represents another key UTAUT variable, referring to the ease with which users can interact with the technology. In [6], the importance of EE as a predictor in BCT acceptance was highlighted, particularly in the field of MI, where the novel concept of BCT can pose challenges among users. SI is the third variable of UTAUT and focuses on the impact of others' experiences on an individual's decision to use or not BCT. Within the healthcare context, examining the opinions of affiliated individuals becomes crucial, considering the moral obligations and pro-social behavior inherent in healthcare professions [4, 6].

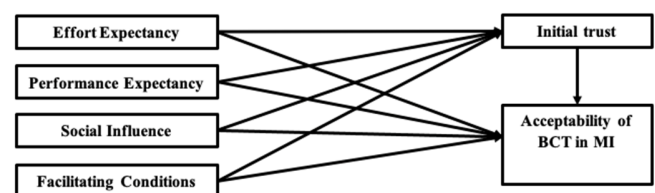


Fig. 1. Conceptual framework.

FC is the fourth variable of UTAUT and includes user perceptions of the support provided by the existing technological and organizational infrastructure for the new technology. This includes factors such as the availability of desktops, network connectivity, and application programming interfaces, which contribute to the user-friendliness of BCT in MI [38]. These UTAUT variables can predict the use of BCT in MI. Based on UTAUT, EE, PE, SI, and FC are predicted to affect the acceptability of BCT in MI [15]. Furthermore, empirical evidence from various studies supports the UTAUT predictors of user intention [10, 12, 38]. While [41] suggests an insignificant impact of PE on usage intention, others demonstrate that this impact is significant [42, 43]. Thus, the following hypotheses were anticipated:

H1: EE positively influences the acceptability of BCT in MI.

H2: PE positively influences the acceptability of BCT in MI.

H3: SI positively influences the acceptability of BCT in MI.

H4: FC positively influences the acceptability of BCT in MI.

##### 2) UTAUT Variables and Initial Trust (IT)

IT is defined as the willingness of doctors to take risks to meet their needs without prior experience or credible and meaningful information about BCT in MI [20, 44]. This study proposes EE, PE, SI, and FC as predictors of IT. This conceptualization diverges from typical extensions of UTAUT or TAM, where trust is often considered an outcome of predicting variables such as EE, PE, SI, and FC. Existing studies, such as [20], indicate that PE and FC have a direct effect on initial trust, while [45] suggests that PE and EE serve as predictors of initial trust. In light of these findings, the following are proposed:

H5: EE positively influences users' IT.

H6: PE positively influences users' IT.

H7: SI positively influences users' IT.

H8: FC positively influences users' IT.

### 3) IT and BCT Acceptability in MI

IT plays a pivotal role in models explaining user utilization of new technology, particularly in the context of BCT. In [20], it was pointed out that IT is critical for users when adopting a new technology with minimal or relatively low experience with its use. Several empirical studies examining BCT acceptance behavior consistently highlighted the significance of IT as a predictor [20, 45, 46]. These findings collectively emphasize the critical role of initial trust in shaping individuals' acceptance of BCT. Consequently, this study proposes:

H9: IT positively influences the acceptability of BCT in MI.

### 4) Mediation Effect of IT

The mediation role of IT is crucial to understanding the dynamics between key factors and the acceptability of BCT in MI. In [47], it was asserted that IT formation can be affected by several variables such as EE, SI, EE, and FC. This aligns with other studies that designated trust as a mediator between predictors and intention of use [20, 48]. In [20], the essential mediating effect of IT in the relationships between PE and FC with BCT adoption intention was shown. Additionally, in [45], a comprehensive framework was introduced, positioning IT as a mediator in the relationships between PE, EE, and SI. This study investigates the mediating role of IT between these variables and the acceptability of BCT in MI.

H10: IT mediates the impact of EE on BCT acceptance in MI.

H11: IT mediates the impact of PE on BCT acceptance in MI.

H12: IT mediates the impact of SI on BCT acceptance in MI.

H13: IT mediates the impact of FC on BCT acceptance in MI.

## III. RESEARCH METHODOLOGY

The research onion framework [49] was implemented to guide the selection of an appropriate methodology. This design adopts a positivist ontology, empirical epistemology, and quantitative methodology. A survey was chosen for its cost-effectiveness and ability to quickly collect standardized information. The study used an extended UTAUT model, testing 13 hypotheses with empirical data collected through a cross-sectional online survey. The study population consisted of doctors working in selected public hospitals in Iraq. The healthcare system in Iraq is primarily managed by the Ministry of Health through public hospitals and clinics. This study focused on healthcare professionals, including clinicians, specialist doctors, EMT doctors, radiologists, and general doctors who had experience in obtaining and using MI data. The sample frame was challenging to obtain due to confidentiality in hospital records. Therefore, probability sampling methods were not applicable. Thus, non-probability sampling, specifically purposive sampling, was chosen. The selection criteria included healthcare professionals with a

minimum of three years of experience, prior experience with MI data, and prior knowledge of BCT in healthcare. The determination of the sample size was based on the PLS-SEM approach, considering factors such as statistical power, effect size, and alpha level. G\*Power was used to calculate the minimum sample size. Based on the settings of this study, the minimum required sample size was 89. A survey questionnaire was used to collect the data from the respondents. The scales of the variables were extracted from previous studies. Table I shows the source of the scales as well as the number of items.

TABLE I. RESEARCH QUESTIONNAIRE

Variables	No. of Item	Response Scale	Source
PE	3	5-point Likert	[15, 38, 50]
EE	3	5-point Likert	[15, 38, 50]
SI	3	5-point Likert	[15, 38, 50]
FC	3	5-point Likert	[15, 38, 50]
IT	4	5-point Likert	[20]
Acceptability of BCT in MI	3	5-point Likert	[15, 38]

Seven experts participated in the validation process to ensure that the measurement was valid for data collection. Experts, including academics and medical professionals, provided their feedback and comments on the validity of the measurement. The experts concluded that the measurement is valid. An Arabic version of the questions was created using back-to-back translations. The reliability of the scales was tested using Cronbach's Alpha (CA), and all scales had a CA greater than 0.70. Data were collected using a survey method, employing online questionnaires distributed to doctors in public hospitals in Iraq. To increase doctor participation, courtesy calls were made to meet with the management of the selected hospitals. These calls aimed to obtain consent for the survey on healthcare professionals' perceptions about BCT use in MI, provide a briefing on the research purpose, and encourage hospital understanding and support. The courtesy visits aimed to foster greater participation among doctors. The link to the online questionnaire was provided to the hospital management, which, in turn, distributed it to doctors via WhatsApp. In addition to WhatsApp, social media platforms such as Facebook were used to invite doctors to participate in the research. This multi-pronged approach aimed to maximize doctor involvement in the study, resulting in 136 responses.

## IV. FINDINGS AND DATA ANALYSIS

### A. Data Examination

Before starting data analysis, missing values, outliers, normality, and multicollinearity were examined [51]. No missing values were identified. No issues of normality or multicollinearity were identified in the data. Normality was confirmed based on the values of skewness and kurtosis (less than 1). Multicollinearity was confirmed based on tolerance and VIF, which were greater than 0.20 and smaller than five, respectively, supporting the absence of multicollinearity as shown in Table II.

TABLE II. RESULTS OF DATA EXAMINATION

Variable	Normality		Multicollinearity	
	Skewness < 1	Kurtosis < 1	Tolerance > 0.20	VIF < 5
PE	-.041	.395	.535	1.868
EE	-.353	.514	.520	1.924
SI	-.302	.299	.596	1.678
FC	-.117	.861	.461	2.171
IT	-.141	.388	.453	2.209
Acceptability of BCT in MI	-.906	.870	-	-

B. Profile of the Respondents

Table III presents the demographic profile of the respondents. Most of them were men (63.2%). A total of 53.7% were in the age group between 45-54 years with experience between 11-15 years (34.6%) and 6-10 years (33.8%). The highest percentage of the respondents worked in radiology (30.9%), followed by surgery (26.5%), and oncology (22.1%).

TABLE III. DEMOGRAPHY OF THE RESPONDENTS

Variable	Label	Frequency	Percent
Gender	Male	86	63.2
	Female	50	36.8
Age	<35 years old	15	11.0
	35-44 years old	37	27.2
	45-54 years old	73	53.7
	>55 years old	11	8.1
Experience	<5 years	6	4.4
	6-10 years	20	14.7
	11-15 years	67	49.3
	16-20 years	43	31.6
Length of work	<5 years	18	13.2
	6-10 years	46	33.8
	11-15 years	47	34.6
	16-20 years	25	18.4
Department	Emergency	16	11.8
	Radiology	42	30.9
	Surgery	36	26.5
	Oncology	30	22.1
	Others	12	8.8

C. Descriptive Information of the Variables

This study included six variables. The highest mean scores were 3.45 for FC and IT, followed by 3.42 for PE, 3.39 for INT, 3.37 for SI, and 3.27 for EE. However, all means were in the range between 2.33 and 3.66, indicating that the variables' levels are moderate, and the respondents showed moderate levels of agreement with the statements of the variables.

D. Measurement Model

Two stages were evaluated in Smart PLS4. The first was the evaluation of the Measurement Model (MM), following the suggestions of [51]. Factor loadings were checked, and there was no loading lower than 0.70. Thus, all the items remained. Next, CA and Composite Reliability (CR) were examined, and all values exceeded the 0.70 threshold. Therefore, CA and CR were achieved. Convergent validity was confirmed based on the notion that the Average Variance Extracted (AVE) for all variables was greater than 0.50. Table IV shows the MM evaluation results, indicating the confirmation of all criteria.

TABLE IV. ASSESSMENT OF MM

Variable	CA > 0.7	CR > 0.7	AVE < 0.5
EE	0.866	0.868	0.789
FC	0.819	0.83	0.734
Acceptability of BCT in MI (INT)	0.832	0.837	0.752
IT	0.843	0.845	0.68
PE	0.727	0.734	0.647
SI	0.711	0.715	0.635

The HTMT correlation was used to examine discriminant validity [52]. The HTMT correlation criterion was achieved, since the correlations were less than 0.85, as shown in Table V.

TABLE V. DISCRIMINANT VALIDITY

	INT	EE	FC	IT	PE	SI
INT	-					
EE	0.485	-				
FC	0.408	0.368	-			
IT	0.68	0.597	0.328	-		
PE	0.689	0.498	0.341	0.582	-	
SI	0.652	0.548	0.209	0.44	0.339	-

E. Structural Model

The Structural Model (SM) was evaluated following the steps given by [51], examining the R<sup>2</sup> value. As shown in Figure 2, the R<sup>2</sup> of IT is 0.337, while the R<sup>2</sup> of acceptability of BCT in MI, referred to as INT, is 0.667. This indicates that 33.7% of initial trust and 66.7% of acceptability of BCT in MI (INT) can be explained by the variables in this study. These R<sup>2</sup> are substantial, based on [51]. The F<sup>2</sup> was also examined. As shown in Table VI, there are F<sup>2</sup> values above 0.02, confirming that the size effect is acceptable, while other values are less than 0.02, indicating that some paths have a weak effect. This could be because the related path is rejected as a hypothesis. Figure 2 shows the SM, which includes the direct effect model and the mediating effect of IT.

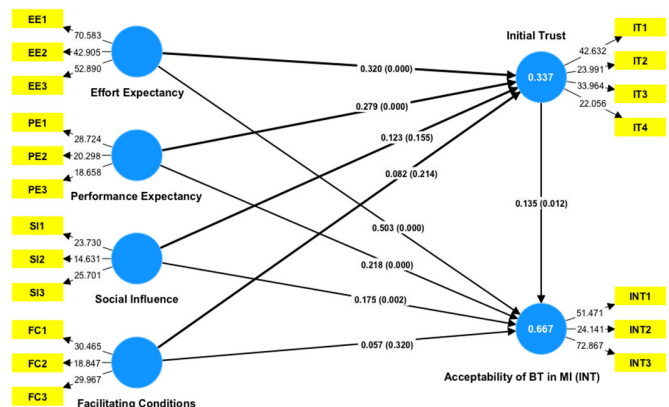


Fig. 2. Structural model.

Table VI shows the hypothesis test results. The table presents the path coefficient (B), the standard deviation (Std), the T-statistics (T), the p-value as (P), and f<sup>2</sup>.

TABLE VI. RESULT OF HYPOTHESES TESTING

H	Path	B	Std	T	P	f <sup>2</sup>
H1	EE → INT	0.503	0.075	6.742	0.000	0.12
H2	PE → INT	0.218	0.061	3.573	0.000	0.091
H3	SI → INT	0.175	0.058	3.031	0.002	0.081
H4	FC → INT	0.057	0.057	0.995	0.320	0.001
H5	EE → IT	0.32	0.076	4.211	0.000	0.114
H6	PE → IT	0.279	0.079	3.513	0.000	0.294
H7	SI → IT	0.123	0.087	1.421	0.155	0.012
H8	FC → IT	0.082	0.066	1.242	0.214	0.015
H9	IT → INT	0.135	0.054	2.522	0.012	0.127
H10	EE → IT → INT	0.043	0.021	2.041	0.041	-
H11	PE → IT → INT	0.038	0.017	2.183	0.029	-
H12	SI → IT → INT	0.017	0.015	1.117	0.264	-
H13	FC → IT → INT	0.011	0.01	1.131	0.258	-

The results, shown in Table VI, support the effect of EE on the acceptability of BCT in MI ( $B = -0.503$ ,  $T = 6.742$ ,  $P < 0.05$ ). Thus, H1 is supported. The effect of PE on the acceptability of blockchain in MI was confirmed ( $B = 0.218$ ,  $T = 3.573$ ,  $P < 0.05$ ). Thus, H2 is supported. For H3, the effect of SI on the acceptability of BCT in MI is supported because the p-value is less than 0.05. Thus, H3 is supported. H4 is rejected and there is no significant effect of FC on the acceptability of BCT in MI. H5 and H6 are supported, and the effect of EE and PE on IT is positive and significant. H7 and H8 are rejected. The effects of SI and FC on IT are not significant. For H9, the effect of IT on the acceptability of BCT in MI is supported ( $B = 0.135$ ,  $T = 2.522$ ,  $P < 0.05$ ). For the mediation role of IT, it was only confirmed between EE and PE on the acceptability of BCT in MI. Thus, H10 and H11 are supported, while H12 and H13 are rejected because the indirect effect is not significant.

## V. DISCUSSION

This study examined the predictors of the acceptability of BCT in MI. The results indicated that EE, PE, and SI are crucial for the acceptability of BCT in MI, while FC is an insignificant predictor. This finding indicates that the ease of using BCT, the benefits of BCT, and the pressure from others who are important to doctors can be essential for the acceptability of BCT in public hospitals in Iraq. Therefore, increasing ease and benefits, as well as social pressure, will lead to increased acceptance of the technology. The FC was found to be not significant, indicating that the established infrastructure still needs more development. The results aligned with the UTAUT model, which indicated that EE, PE, and SI are critical for the use of technology, but also contradict UTAUT, which highlights the importance of FC [15]. However, the literature is mixed in terms of the effect of UTAUT variables on the use of the technology, as shown in [41] and others who found a significant effect of PE and SI on usage intention [10, 12, 38].

The findings also showed that the effect of EE and PE was significant on IT, while SI and FC did not affect it. These results are in agreement with [20] and [45], who found that PE is critical for IT and that only PE and EE affected it. IT also positively affected the acceptability of BCT in MI. This indicates that increasing the level of IT can lead to a positive

increase in the acceptability of BCT in MI in public hospitals in Iraq. This is in agreement with previous studies that highlighted the importance of IT as a predictor of BCT acceptance [20, 53, 54]. However, the mediating role of IT was confirmed only between EE and PE and the acceptability of BCT in MI, indicating that IT can explain part of this relationship. These findings agree with [20, 48] and are in line with the expanded trust model.

## VI. IMPLICATIONS

This study investigated the predictors of the acceptability of BCT in MI. The results contribute to the existing knowledge in terms of the acceptance of BCT in MI, in the context of non-developed countries such as Iraq. The study also contributes to the literature by investigating the behavioral approach rather than the technical dominant approach. This study specifically identified the role of EE, PE, SI, and FC in the acceptability of BCT in MI and IT. In addition, the role of IT as a mediator was investigated. Moreover, the study confirmed the effect of IT in the context of BCT in MI. This study also improves the explanatory power of the UTAUT, explaining 33.7% of the IT and almost 66.7% of the acceptability of BCT in MI. Therefore, this study contributed to the validation of UTAUT and its extension to BCT acceptance in MI. Including IT in the model explained better the acceptability of BCT in MI.

This study also offers actionable insights for stakeholders involved in the implementation of BCT in MI. EE, PE, and SI are important for the acceptability of BCT in MI. Therefore, decision-makers should focus on improving the perception of ease of use and benefits of BCT, and increase SI by focusing on awareness programs and peer testimonials. On the other hand, the impact of FC was found to be insignificant. Therefore, decision-makers should make more effort to remove the barrier and ease the process of using BCT. This can be achieved by conducting training programs in which doctors and medical users can acquire the knowledge required to use BCT in MI. Public hospitals are suggested to improve infrastructure readiness and establish networks, servers, hardware, and software that can facilitate the use of BCT in MI. IT was found to be important for the acceptability of BCT in MI. Therefore, decision-makers are recommended to develop trust in BCT in MI. This can be achieved by focusing on the transparent, reliable, and secure use of BCT in MI. IT mediated the effect of EE and PE on the acceptability of BCT in MI. Consequently, more attention should be paid to the perceived ease of use and the benefits of BCT in MI to enhance its use among medical professionals.

## VII. CONCLUSION, LIMITATIONS, AND FUTURE WORK

This study examined the factors that affect the acceptability of BCT in MI among public hospital personnel in Iraq. The research used Smart PLS to examine data from a small sample of doctors. The data showed that EE, PE, and SI are essential for the acceptability of BCT in MI. In addition, PE and EE predicted IT. The findings also showed that IT improves the acceptability of BCT in MI and mediates the influence of EE and PE. The sample size of this study limits its generalizability, but is adequate for analysis. As this research focuses on public

hospitals in Iraq, the results do not apply to other countries or industries. To address these limitations and enhance the conclusions of this research, further studies should collect more responses. Random sampling and a larger sample size can improve the generalizability of this research. Future research should study the acceptance of BCT in various sectors and countries. More studies are needed to be conducted using different theoretical frameworks, such as the Task Technology Fit (TTF) or the Social Exchange Theory (SET) and the technology organization environment framework. Including more variables can be a direction for future studies. Variables such as perceived risk and technology knowledge can enhance the explanatory power of the BCT adoption model.

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