



Revolutionizing Digital Marketing with Blockchain Technology: An empirical investigation of Pakistani SMEs

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Abstract

Blockchain technology, with its unique advantages of decentralization, security, and transparency, has completely changed marketing strategies and brought new modern frameworks. Scholars and industry professionals have been drawn to this technology in recent years to investigate the fundamental mechanisms and prospects of using blockchain technology in marketing. This study aims to investigate the future impact of blockchain technology on digital marketing by focusing on its role in reducing costs, improving security and privacy. To fulfill the aim of the study, the author investigates the perceived benefits of blockchain adoption in digital marketing, including its disintermediation, transparency, and security. The research also aims to provide insights for marketers, firms, and governments on how to use blockchain technology to enhance digital marketing practices. The study used a structural questionnaire to assess the intention to use blockchain technology in digital marketing among small and medium-sized enterprises in Pakistan. The present study conducted the structure equation modelling analysis to empirically examine the hypothesis via AMOS. The study demonstrates that employees' intentions to utilize blockchain technology for digital marketing are significantly influenced by training, perceived value, and resource availability. Additionally, user adoption intentions are greatly influenced by blockchain capabilities including security & privacy, storytelling, disintermediation, and transparency.

Keywords: *Blockchain technology, Digital marketing, Intention to use, Blockchain capabilities, Dynamic capability theory*

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1. INTRODUCTION

The blockchain concept was first put out as a payment system; it swiftly gained popularity in other fields due to its hard to compromise and simple to uphold structure (Sonmezturk et al., 2020). Businesses that want to remain successful should start considering their investment alternatives in blockchain projects that put an emphasis on cutting costs, improving competences, and grabbing new chances to provide original consumer value (Ghazaleh & Zabadi, 2021). Marketing mix aspects, campaign execution, and client interactions might all be drastically changed by the application of blockchain technology (Madhani, 2022c). Blockchain introduced new techniques for data storage and sharing transaction administration, and the transfer of digital assets (Grover et al., 2019). While Facebook is in the process of developing its own blockchain-based cryptocurrency system for use within its SNSs platforms, major corporations and organizations like Walmart, IBM, and NASDAQ have already created and implemented blockchain solutions to manage their operations, affecting marketing programs (Antoniadis et al., 2019). Additionally, it streamlines customer privacy and transparency, automates data compliance procedures, enables a transparent transaction, raises productivity by reducing back-office labor, and improves marketing efficacy (Madhani, 2022c).

Pakistani small and medium enterprises (SMEs) must adapt to their digital possibilities and resources if they want to continue selling their goods and services in the conventional manner (Peter & Vecchia, 2021). Employees of Pakistani SMEs are becoming more interested in and want to embrace blockchain technology, which has important consequences for the commercial landscape of the nation (Falwadiya & Dhingra, 2022). Employees at Pakistani SMEs who intend to use blockchain technology demonstrate their understanding of the revolutionary possibilities it offers for their businesses. These businesses may simplify a number of operations, including supply chain management, financial transactions, and record-keeping, by using blockchain. The capacity of blockchain technology to provide transparency is one of its most remarkable features. SMEs may guarantee that information is securely kept and available to only authorized persons by using blockchain-based solutions. Training, perceived value and availability of resources are crucial factors that influence the intention to use blockchain technology in digital marketing (Jain et al., 2021). By training marketers on the perceived value and benefits of blockchain, as well as providing them with the necessary resources, organizations can foster a positive attitude towards adopting this innovative technology. Ultimately, this can lead to more effective and efficient digital marketing strategies, empowering businesses to stay competitive in the ever-evolving digital landscape.

The most important research inquiry of the current study is What are the critical factors for Predicting the Impact of Blockchain Technology on Digital Marketing and the Role of Blockchain Capabilities? To fill the research gap and answer the research question, the study used dynamic capabilities theory as theoretical lens to propose research model. The research will investigate the influence of blockchain technology on digital marketing by incorporating blockchain capabilities that may play in revolutionizing the sector of digital marketing. The research also will investigate some important factors that are helpful in the adoption of blockchain.

Moreover, the study wants to investigate how blockchain might solve the rising concerns about customer privacy and data security. The study intends to analyze how blockchain's decentralized nature and cryptographic methods may provide customers more control over their personal data, allowing them to share it safely with advertising while retaining their privacy. The study also intends to analyze the influence of blockchain technology capabilities on digital marketing. Overall, the goal of this research is to give insight on the possible role of blockchain technologies in transforming digital marketing practices.

2. THEORETICAL FRAMEWORK AND HYPOTHESIS

2.1 Dynamic capability theory

An organization's capacity to combine, develop, and reorganize internal and external competencies in response to the rapidly evolving environment is referred to as its dynamic capabilities (Barreto, 2010). The idea of dynamic capacities is frequently used to shed light on the issue of whether established businesses can significantly change their product and service ranges to assert their competitive advantage when consumer demand changes (Murmman & Vogt, 2023). The resource-based approach, which aims to clarify how internal sources enable a business to maintain its competitive edge, is expanded by dynamic capabilities (Goel et al., 2023). Blockchain networks can stay relevant and competitive in a market that is changing quickly by adopting dynamic capabilities companies may combine cutting-edge technology, adapt to new use cases, and provide an adaptable infrastructure to meet the changing demands of consumers, companies and the larger ecosystem. Despite route dependencies and fundamental rigidities in the firm's organizational and technological processes, "dynamic capabilities reflect an organization's ability to achieve new and innovative forms of competitive advantage" (Nootboom, 2006). Thus, these capabilities make it easier to alter and update present procedures and encourage invention for better compatibility with the surroundings. Dynamic capabilities, which are more advanced capabilities of businesses, may assist them in creating a long-lasting competitive edge in highly unstable environments (Shen et al., 2022). Therefore, by considering the relevance and advantages, this study used dynamic capabilities theory as a theoretical lens to proposed research framework as shown in Figure 1.

2.2 Training

Actions taken to improve or create new skills are referred to as training (Mantei, 2014). Training refers to a company's deliberate efforts to increase staff members' understanding of skills linked to their jobs (Kumpikaite & Čiarniene, 2010). A crucial step in the implementation phase is (Marler et al., 2006). Companies that invest in staff training on emerging technologies get an edge over their competitors. Trained staff may use cutting-edge technologies and approaches to enhance goods or services, simplify processes, and create a better customer experience. One of the most common strategies for increasing productivity and job performance in the workplace is training (Chatzoglou et al., 2009). The value of training to increase employee confidence in their capacity to use new systems to achieve organizational

goals (Business et al., 2019). Blockchain training also emphasizes the importance of security, privacy, and compliance within blockchain implementations employees who are knowledgeable in these areas can better understand the potential risks and take appropriate measures to mitigate them, reducing the likelihood of data breaches or other vulnerabilities. In an organization knowledge sharing may be considered as a process that can be sped up, overcome hurdles, transcend geographic boundaries, save expenses, and enhance and accommodate handler-to-handler communication through training (Chatzoglou et al., 2009). Faster technical change is often experienced by high technology organizations, and this speed is tied to training (Mantei, 2014). Following training, the desire to practice supports the long-term memory storage, retrieval, and generalization processes (Marler et al., 2006). Many businesses and people utilize micro-credentials from the necessary training organizations to fill awareness or skill shortages in the blockchain technology (Fachrunnisa & Hussain, 2020). As a whole, providing employees with blockchain technology training boosts their willingness to use it and creates a more educated, creative, and competitive employee. Therefore, the study hypothesizes that

H1: Training has a positive association with intention to use blockchain

2.3 Perceived value

Blockchain technology improves the working environment and the value employees place on their work-related activities. A set of affiliations and advantages that a firm provides in return for an employee's skills, expertise, and experiences can be described as perceived value (Adly & Sheikh, 2020). The estimation of a potential benefit or loss that can result from employing a certain item or service is known as perceived value (Shahbaz & Zahid, 2022). In the adoption of new technologies, individuals are said to be motivated by a technology's utility (Sukumaran et al., 2022). The use of blockchain in small and medium-sized businesses will increase the perceived worth of their workforce for the purpose of upgrading employee skill and knowledge (Fachrunnisa & Hussain, 2020). As blockchain technology gains popularity, new and exciting opportunities are opening up for businesses to provide workers appealing solutions (Kolkata, 2022). Additionally, a platform based on blockchain technology that seeks to eliminate middlemen like recruitment agencies and update the framework of relationships between employers and employees in the workforce is one of the most significant perceived values for people (Dolzhenko, 2021). Therefore, this study proposed,

H2: perceived value has a positive association with intention to use blockchain

2.4 Availability of resources

The basic concept of resource availability has therefore been raised by the resources that enterprises must embrace, such as competent human resources, eco-friendly materials, associated knowledge and technology energy-saving instruments and advantageous external settings (Jiao, 2020). The ability intention to choose and implement strategies and actions in response to changes in the internal and external environment depends on the availability of resources (Jiao, 2020). In order to maximize performance businesses need to be able to balance the resources they

have available in ways that correspond to the market conditions they face (Journal, 2009). Resources that may provide you a competitive edge are hard to find, costly, and replace (Yuthas et al., 2021). The significance of resource availability must be reflected in improved financial performance (Srivastava et al., 2001). Small and medium-sized businesses may find it difficult to implement blockchain due to their limited financial resources and technological skills (Tulung, 2017). In general, the more resources a company has available for adopting new technologies, the simpler it will be to do so and fully use the application value of those technologies (Wang et al., 2022). Any multinational company's intention to use new technology is based on influenced by the resources available to it which has a bearing on the establishing strategy it selects (Tulung, 2017). The amount of resources available can influence the level of team presentation (Weiss et al., 2013). The resources that is necessary for businesses to adopt such as knowledgeable human resources, eco-friendly materials, related knowledge and technologies, energy-saving tools, and beneficial external environments, have thus elevated the paradigm of resource availability (Jiao, 2020). For intention to use blockchain technology successfully resources like as knowledgeable developers, blockchain specialists, and technical support teams must be readily available.

H3: Availability of resources has a positive association with intention to use blockchain

2.5 Intention to use blockchain

A basic block of unambiguous digital information that is highly secured, shareable and unchallengeable might be described as a blockchain (Miah et al., 2019). Blockchain may help brand managers develop, maintain and restore trust (Erevelles et al., 2020). The decentralized structure of blockchain enables transparent and unchangeable record-keeping, which can increase consumer, publisher, and advertiser confidence. The use of blockchain might lead to a redefining of the relevance and meaning of holistic marketing, with the potential to further and more drastically alter how we manage the marketing mix and marketing programs (Antoniadis et al., 2019). Additionally, blockchain offers its users improved security, privacy, usability, and data dependability (Agrawal et al., 2018). The absence of intermediaries is another advantage of blockchain that might be used to the marketing sector (Aliahmadi et al., 2022). By removing middlemen and lowering transaction costs, blockchain-based smart contracts may automate payment operations." Conflicts can be resolved openly using blockchain if there is an unalterable record of prior transactions (Ramachandiran, 2018). A better way to enforce agreements, facilitate participation, and facilitate coordination between parties is provided by blockchain innovation (Ming & Saila, 2022). Blockchain technology increases transparency, protects consumer data, fosters trust, enables data traceability, lowers transaction and investment costs and provides individualized goods and services (Biçer Oymak et al., 2021). The technology is extremely resistant to fraud and hacking because of its decentralized structure. Each transaction is recorded on a block, which is connected to the block before it, forming a data chain that is challenging to alter.

H4: Intention to use blockchain has a positive association with security and privacy

H5: Intention to use blockchain has a positive association with storytelling

H6: Intention to use blockchain has a positive association with disintermediation

H7: Intention to use blockchain has a positive association with transparency

2.6 Security and privacy

Security threats are defined as situations, conditions, or occurrences that have the potential to harm data or network resources financially through data loss, disclosure, alteration, refusal of service, fraud, inefficiency, or misuse (Rejeb et al., 2020). Threats may be identified and protected and threats can be appropriately countered by using security technologies, rules, and IT services (Preethi et al., 2020). Internet of things must maintain the fundamental security goal of privacy, integrity and availability (Mohanta et al., 2021). Blockchain technology is essential for information security, or cyber security, in the future (Marriott & Williams, 2017). Blockchain enhances digital marketing security by guaranteeing that data and transactions are safely preserved and cannot be changed without the agreement of all parties involved. Furthermore, the blockchain's high degree of technological complexity and built-in features have demonstrated its ability to improve security in digital marketing and protect client privacy (Aliahmadi et al., 2022). Blockchain-based digital marketing security guarantees that data and transactions are maintained securely and can't be changed without a majority of users agreeing to it (Gordijn et al., 2019). By keeping precise and decentralized data records, blockchain technology can improve data security. Therefore,

H8: Security and privacy has a positive association with digital marketing

2.7 Storytelling

Brand storytelling is still one of the most effective ways to pique customers' interest in different brand features and make them more memorable in their thoughts (Kemp et al., 2023). Blockchain applications might assist businesses in telling a more meaningful and inspirational story to external audiences, as customers desire experiences that appeal to their sentiments and thoughts (Benstead et al., 2024). Brands that have blockchain technology might capitalize on their corporate image by incorporating their extensive history and brand identification into every product. Curtis Park Market, a wine company, for example, allows customers to scan a barcode on every container of wine (e.g., 19 Crimes Wine) to learn about the history of each product, from manufacturing to retail, using a virtual reality blockchain app (Boukis, 2020). Customers could subsequently utilize this to search for more information about the product that they are buying and obtain it swiftly, resulting in a more factual and appealing brand experience (Silvestri et al., 2023). Positive user-generated content and brand communication may not be enough to maintain a genuine brand image over time. To improve their brand portfolio storytelling techniques and provide more engaging, real-world, and interactive customer experiences, businesses may need to use blockchain applications (Boukis, 2020).

H9: Storytelling has a positive association with digital marketing

2.8 Disintermediation

The word disintermediation refers to a decline in the use of middlemen or intermediaries between producers and consumers (Le & Yen, 2021). The blockchain solitary model emphasizes disintermediation, in which the consensus process replaces the intermediary (Bischoff & Seuring, 2021). Transaction speed has significantly enhanced across several nations because to the absence of intermediaries (Masood & Faridi, 2018). Disintermediation reduces overall marketing costs, boosts transparency and trust and guards against ad fraud (Madhani, 2022c). The value of the blockchain for digital transactions is said to come from the elimination of middlemen (Grover et al., 2019). “Additionally, blockchain-based smart contracts can automate and enforce financial agreements, eliminating the need for intermediaries like lawyers or escrow agents”. Disintermediation provided by blockchain decreases transaction costs and expenses of goods delivered by doing away with intermediaries (Madhani, 2022b). Disintermediation is a concept that frequently appears in the literature and refers to the lack of a central authority in a blockchain system, regardless of whether the transactions are intended to be of a financial character or not. Disintermediation can offer significant advancements in data management, including decentralization, traceability, integrity, and immutability (Le & Yen, 2021). Blockchain technology can facilitate self-sovereign identity, where individuals have control over their personal data and can directly authenticate their identity without relying on third-party intermediaries like governments or corporations. This provided the groundwork for Bitcoin, a digital currency that allows payment via the Internet without the involvement of third-party middlemen like banks or credit card firms (Masood & Faridi, 2018). Cryptocurrencies like Bitcoin that operate on the blockchain let users interact directly with one another without the involvement of conventional financial institutions.

H10: Disintermediation has a positive association with digital marketing

2.9 Transparency

Transparency discusses to the availability of information which is simply accessible for all parties and also to the external agencies (Centobelli et al., 2022). Making it simple for consumers to understand what is being done and how it is being done is what is meant by transparency, which also refers to openness, communication, and accountability (Madhani, 2022a). Blockchain is distributed and anybody may view the data on the ledger (Panda & Satapathy, 2021). The sharing of information to reduce hesitancy over goods or services is directly tied to transparency (Joo & Han, 2021). “Transparency refers to the fact that all transactions on the blockchain are recorded and made available to all users in a decentralized database environment. By making network activities and functions readily apparent, this level of transparency lessens the need for trust. Transparency is the ability to know what is going on in the business upstream and to share this knowledge with other participants across the firm (Joo & Han, 2021). Blockchain fosters systemic trust through the immutable design of the system and the reciprocal transparency and integrity of the data it provides about transactions. Utilizing blockchain in marketing promotes buying process transparency by enabling customers to attest to items (Madhani, 2022b). Understanding the implications and impacts of a decision on a product and the

environmental circumstances is made possible through transparency. A successful Halal food chain must be transparent, and the existence of openness will increase consumer confidence in Halal-certified goods (Zainal Abidin & Putera Perdana, 2020). Greater accountability will result from greater transparency. blockchain will compel companies to increase their level of activity transparency (Routray, 2020). Blockchain will increase transparency, which will aid in the elimination of fraud in digital marketing. As data is maintained digitally blockchain aspires to promote transparency across all business sectors (Brauer, 2020). It is feasible to guarantee confidence and transparency over activities linked to online advertising such as the click-authentication process with the implementation of blockchain technology (Madhani, 2022b). Blockchain enables businesses to conduct business with their consumers in a transparent and secure manner without the use of a financial institution or a third-party broker (Ghazaleh & Zabadi, 2021). As data is maintained digitally, blockchain aspires to promote transparency across all business sectors (Routray, 2020). Because of the transparency that blockchain technology offers, marketers can stop the sale of fake goods.”

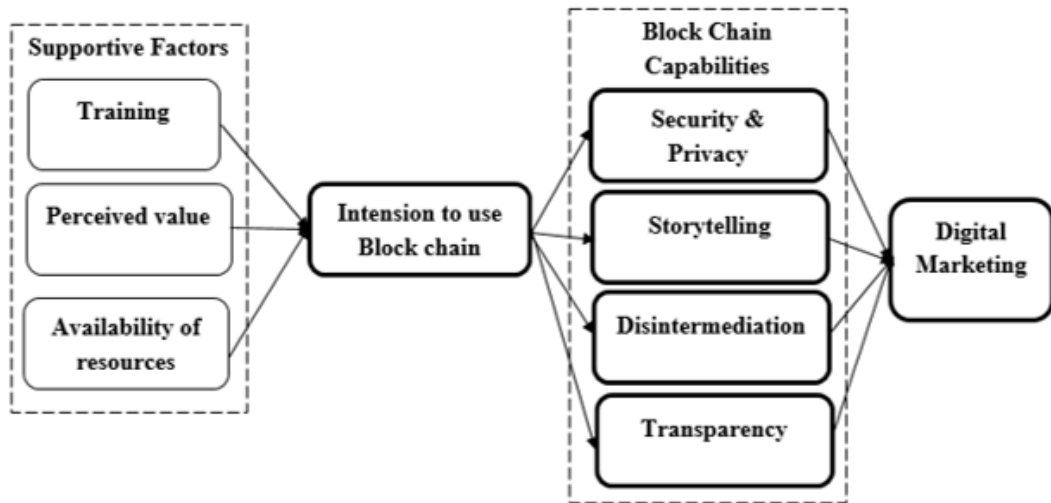


Figure 1 Proposed Research Model

3 METHODOLOGY

3.1 Questionnaire design

In order to preserve the validity and ensure the link between variables on the basis of primary data, the structural questionnaire approach was used for data collection in this study. For collecting data, a seven-point Likert scale (1 for strongly disagree to 7 for strongly agree) was adopted to numerically measure the items. The 3-item training scale was adapted from (Marler et al., 2006), the three-item perceived value scale was adapted from (Adly & Sheikh, 2020), four-item availability of resources scale was adapted from (Deesomsak et al., 2013). Similarly, the five-item intention to use blockchain was adopted from (Shahbaz et al., 2021), the five-item security

& privacy was adapted from (de Haro-Olmo et al., 2020). The five-item storytelling was adopted from (Dhote & Kumar, 2019). The three-item disintermediation was adapted from (Prayag & Del Chiappa, 2014), and the seven-item scale for transparency was adapted from (Joo & Han, 2021),

3.2 Population and sampling

Population refers to the whole set of objects from which data is obtained for the purposes of statistical analysis (Ravikiran, 2023). The current research considered the employees of SMEs in Pakistan who are directly or indirectly related to the digital marketing as population. 1.2 million of Punjab's 1.8 million manufacturing industry employees work for small and medium-sized businesses (Khan et al., 2022). Since it was impossible to collect data from all the cities due to a Shortage of time and money, the main Punjab cities of Lahore, Multan, Faisalabad, Gujranwala, and Sheikhpura were chosen as the sample for the present research. A total of 1600 questionnaires were distributed throughout the sector, and 397 replies were chosen for additional examination.

4 RESULTS

4.1 Common Method Variance/ Bias (CMV)

Additionally, (Kock, 2017)common method bias is a phenomenon caused by Additionally, (Kock, 2017) demonstrate in his study that the full collinearity test should be used in conjunction with the inner variance inflation factor (VIF) to identify common method bias (CMB) when PLS-SEM is used in research. All of the above, the inner VIF values should be below the threshold of 3.3. The study used software to run the aforementioned test, and the inner VIF Table 4.2 has the values. These results demonstrated that inner VIF values are ranged from 1 to 1.601 which ensure the common method bias wasn't a significant issue in this investigation

4.2 Demographical results

The respondents' demographic data is shown in Table 1. This includes 67.8% responses who are men. The 87% of the respondent is younger than 45 years old, with 79% possessing a graduate or master degree. As a result, the study's sample is well-educated, youthful, and varied in terms of gender.

Table 1 Demographics

Category		Frequency	Percent	Valid percent	Cumulative percent
Gender	Male	269	67.8	67.8	67.8
	Female	128	32.2	32.2	100.0

	Total	397	100.0	100.0	
Age	18-25	95	23.9	23.9	23.9
	26-35	153	38.5	38.5	62.5
	36-45	99	24.9	24.9	87.4
	Above 45	50	12.6	12.6	100.0
	Total	397	100.0	100.0	
Education	Undergraduate	73	18.4	18.4	18.4
	Graduate	160	40.3	40.3	58.7
	Master	155	39.0	39.0	97.7
	Doctoral	9	2.3	2.3	100.0

4.3 Measurement model

A confirmatory factor analysis (CFA) was performed in the current study using the Smart PLS technique to identify the specific validities and reliabilities metrics for verifying the measurement model. The study can go on to hypothesis analysis once the results of the measurement model have been validated.

4.4 Convergent validity and reliability analysis

The present investigation evaluated the convergent validity and reliability analyses to determine the effectiveness of the measurement model. Confirmatory factor analysis (CFA) was carried out using Smart-PLS v3 and, when necessary, IBM SPSS to establish component reliability. According to the research of (Hair Jr et al., 2014), a recommended threshold value of 0.7 or above for adequate dependability has been made. All item loadings exceeded this limit, ranging from a minimum of 0.8 to a high of 0.988, as shown by Table 2.

Table 2 Factor Loading

Variables	Items	AR	DM	DI	INT	PV	S_P	ST	TR	TRAN
Avail-ability of resources	AR1	0.861								
	AR2	0.917								
	AR3	0.858								

Disinter-mediation	DI1		0.901						
	DI2		0.919						
	DI3		0.886						
Digital marketing	DM1			0.890					
	DM2			0.897					
	DM3			0.834					
Intention to use blockchain	INT1				0.835				
	INT2				0.912				
	INT3				0.923				
	INT4				0.835				
	INT5				0.951				
Perceived value	PV1					0.949			
	PV2					0.975			
	PV3					0.962			
Story telling	ST1						0.898		
	ST2						0.924		
	ST3						0.844		
	ST4						0.910		
Security and privacy	S_P1							0.844	
	S_P2							0.854	
	S_P3							0.873	
	S_P4							0.892	
	S_P5							0.884	
Training	TR1								0.984
	TR2								0.982
	TR3								0.988
Transparency	Tran1								0.843
	Tran2								0.841
	Tran3								0.835
	Tran4								0.800
	Tran5								0.813
	Tran6								0.841

The investigator in the study analyzed various operationalization's' that were thought to be comparable based on the underlying theory in order to assess its convergent validity. Table 3 presents the results of the investigation of convergent validity and reliability. It took into account statistics like Cronbach's alpha, rho_A, Composite reliability (CR), and Extracted average variance (AVE).

Table 3 Convergent validity and reliability analysis

Cronbach's				
Variables	Alpha	rho_A	CR	AVE
Availability of				
Resources	0.853	0.859	0.911	0.773
Digital Marketing	0.846	0.857	0.907	0.765
Disintermediation	0.885	0.888	0.929	0.813
Intention to use				
Blockchain	0.935	0.937	0.951	0.797
Perceived Value	0.96	0.962	0.974	0.926
Security & Privacy	0.919	0.923	0.939	0.756
Storytelling	0.917	0.923	0.941	0.8
Training	0.984	0.985	0.99	0.97
Transparency	0.909	0.91	0.93	0.687

The findings showed that all constructs' Cronbach's alpha values should higher than the threshold value of 0.7. For all variables, the smallest and highest Cronbach's alpha values were 0.846 and 0.984, respectively.

4.5 Discriminant validity

Instead of using the convergent validity methodology the researcher used discriminant validity to measure how different a construct's operationalization is from other operationalization with different theoretical underpinnings. Three techniques were used by the researcher to assess discriminant validity. According to (Fornell & Larcker, 1981), the first approach involved examining the relationships between variables and the square root of the extracted average variance. Table 4 presents the results of fornell and larcker criterion.

Table 4 Fornell & Larcker's Criterion

	AR	DM	DI	INT	PV	S_P	ST	TR	TRAN
AR	0.879								
DM	0.382	0.874							
DI	0.42	0.491	0.902						
INT	0.385	0.479	0.461	0.893					
PV	0.421	0.387	0.414	0.466	0.962				
S_P	0.439	0.51	0.49	0.474	0.47	0.87			
ST	0.397	0.386	0.424	0.448	0.476	0.434	0.895		

TR	0.373	0.338	0.327	0.368	0.368	0.416	0.39	0.985	
TRAN	0.434	0.435	0.495	0.433	0.448	0.513	0.356	0.381	0.829

According to (Fornell & Larcker, 1981), the cross-loadings criteria have been used in several researches to evaluate discriminant validity. Table 5 shows the loadings and cross-loadings of all items to support this claim and demonstrates that the loadings of each factor outweigh the cross-loadings of other hidden variables

Table 5 Cross Loading

	AR	DI	DM	INT	PV	ST	S_P	TR	TRAN
AR1	0.861	0.372	0.348	0.321	0.355	0.376	0.373	0.323	0.364
AR2	0.917	0.401	0.331	0.367	0.377	0.38	0.396	0.367	0.397
AR3	0.858	0.332	0.331	0.325	0.379	0.29	0.388	0.291	0.383
DI1	0.357	0.901	0.427	0.419	0.382	0.359	0.468	0.301	0.47
DI2	0.417	0.919	0.484	0.424	0.399	0.392	0.44	0.288	0.463
DI3	0.359	0.886	0.415	0.403	0.337	0.396	0.418	0.298	0.404
DM1	0.348	0.436	0.890	0.444	0.383	0.371	0.49	0.269	0.434
DM2	0.309	0.481	0.897	0.425	0.316	0.343	0.434	0.286	0.377
DM3	0.35	0.365	0.834	0.384	0.311	0.293	0.409	0.341	0.321
INT1	0.329	0.359	0.386	0.835	0.378	0.362	0.412	0.324	0.35
INT2	0.363	0.462	0.448	0.912	0.434	0.429	0.425	0.346	0.399
INT3	0.329	0.407	0.447	0.923	0.399	0.41	0.412	0.297	0.401
INT4	0.35	0.396	0.425	0.835	0.451	0.382	0.428	0.364	0.399
INT5	0.343	0.426	0.426	0.951	0.413	0.412	0.438	0.307	0.379
PV1	0.387	0.36	0.356	0.45	0.949	0.443	0.464	0.369	0.42
PV2	0.415	0.423	0.392	0.467	0.975	0.475	0.461	0.353	0.452
PV3	0.413	0.413	0.368	0.426	0.962	0.453	0.43	0.34	0.422
ST1	0.345	0.369	0.328	0.363	0.433	0.898	0.364	0.331	0.317
ST2	0.368	0.4	0.369	0.435	0.426	0.924	0.4	0.366	0.317
ST3	0.342	0.394	0.392	0.425	0.421	0.844	0.427	0.373	0.342
ST4	0.365	0.344	0.274	0.365	0.418	0.91	0.348	0.313	0.287
S_P1	0.383	0.443	0.411	0.351	0.42	0.411	0.844	0.366	0.429
S_P2	0.369	0.419	0.442	0.399	0.405	0.4	0.854	0.371	0.428
S_P3	0.365	0.386	0.421	0.395	0.374	0.302	0.873	0.333	0.418
S_P4	0.389	0.455	0.49	0.424	0.406	0.404	0.892	0.377	0.476
S_P5	0.4	0.427	0.449	0.481	0.437	0.371	0.884	0.362	0.475
TR1	0.37	0.323	0.332	0.369	0.366	0.378	0.418	0.984	0.378
TR2	0.364	0.322	0.329	0.361	0.359	0.386	0.401	0.982	0.369
TR3	0.369	0.321	0.337	0.357	0.363	0.389	0.41	0.988	0.377

Tran1	0.378	0.442	0.38	0.366	0.385	0.339	0.504	0.361	0.843
Tran2	0.343	0.392	0.358	0.342	0.371	0.284	0.409	0.321	0.841
Tran3	0.366	0.424	0.394	0.375	0.383	0.28	0.412	0.321	0.835
Tran4	0.34	0.385	0.347	0.38	0.373	0.282	0.405	0.289	0.800
Tran5	0.387	0.389	0.328	0.346	0.367	0.27	0.415	0.309	0.813
Tran6	0.345	0.427	0.352	0.341	0.35	0.312	0.404	0.29	0.841

To get around the cross-loading and Fornell and Larcker criteria's drawbacks, the HTMT ratio criterion was created. A result around unity in the HTMT ratio, which measures the correlation between constructs, denotes a lack of discriminant validity (Dijkstra & Henseler, 2015). According to Table 6 the maximum HTMT ratio was 0.689, which is less than the specified cutoff.

Table 6 Heterotrait-Monotrait ratios (HTMT)

	AR	DI	DM	INT	PV	ST	S_P	TR
DI	0.481							
DM	0.453	0.563						
INT	0.43	0.505	0.536					
PV	0.466	0.449	0.427	0.491				
ST	0.448	0.467	0.429	0.479	0.506			
S_P	0.495	0.543	0.574	0.508	0.5	0.468		
TR	0.406	0.351	0.374	0.383	0.379	0.407	0.437	
TRAN	0.493	0.55	0.491	0.468	0.479	0.386	0.559	0.402

Path analysis and hypothesis testing

The study next evaluated the research model’s validity and looked at its convergent and discriminant properties. Using Smart PLS v3 and the methods proposed by (Hair et al., 2019) yet concise, overview of the considerations and metrics required for partial least squares structural equation modeling (PLS-SEM a standardized route was used to evaluate the potential associations between the constructs. The R square values of D = 21.2%, DM= 36.1%, INT= 28.7%, St= 20.1%, S&P= 22.5%, and TRAN= 18.8% as shown in Figure 2.

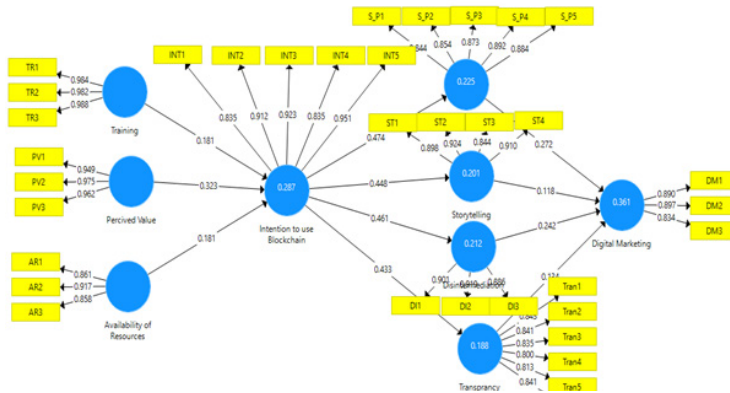


Figure 2 SEM Analysis results

According to the consequences of Figure 3, Training ($\beta = 0.181$, $P= 0.001$), perceived value ($\beta = 0.323$, $P= 0.000$), and resource availability ($\beta = 0.181$, $P= 0.000$) are supportive elements that are substantially linked to the intention to use blockchain technology. Additionally, the blockchain capability factors such as security and privacy ($\beta = 0.474$, $P= 0.000$), storytelling ($\beta = 0.448$, $P= 0.000$), disintermediation ($\beta = 0.61$, $P= 0.000$), and transparency ($\beta = 0.433$, $P= 0.000$) are all favorably correlated with intention to use blockchain. Moreover, the blockchain capability factors such as security and privacy ($\beta = 0.272$, $P= 0.000$), storytelling ($\beta= 0.118$, $P= 0.010$), disintermediation ($\beta= 0.242$, $P= 0.000$), and transparency ($\beta = 0.134$, $P=0.012$) are all positively associated with digital marketing. The study’s findings support the following hypotheses: H1, H2, H3, H4, H5, H6, H7, and H8, H9, H10, H11.

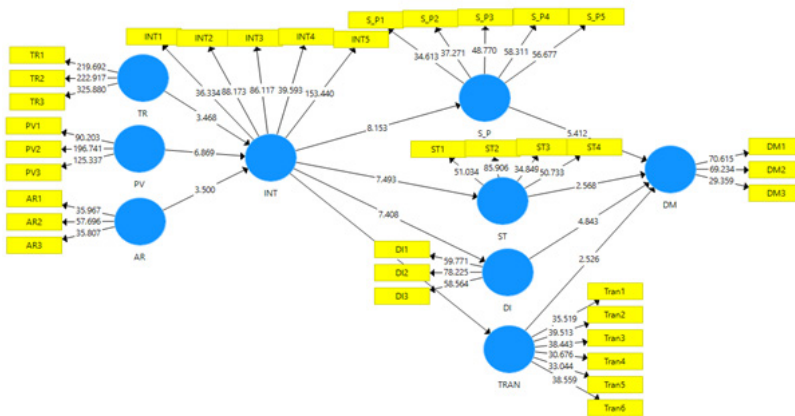


Figure 3 bootstrapping analysis

Furthermore, the t-statistics of the suggested study model were displayed in Table 7 bootstrapping analysis. The t-statistics threshold is 1.9, which denotes that a significant link exists when the values are equal to or greater than 1.9. The outcomes showed that all the associations of recommended research model are meaningfully related.

Table 7 SEM results with bootstrapping for hypotheses testing

	Original Sample	Sample Mean	Standard Deviation	T Statistics	P Values
AR -> INT	0.181	0.181	0.052	3.5	0.000
DI -> DM	0.242	0.241	0.05	4.843	0.000
INT -> DI	0.461	0.457	0.062	7.408	0.000
INT -> ST	0.448	0.445	0.06	7.493	0.000
INT -> S_P	0.474	0.472	0.058	8.153	0.000
INT -> TRAN	0.433	0.429	0.062	7.03	0.000
PV -> INT	0.323	0.321	0.047	6.869	0.000
ST -> DM	0.118	0.117	0.046	2.568	0.010
S_P -> DM	0.272	0.272	0.05	5.412	0.000
TR -> INT	0.181	0.179	0.052	3.468	0.001
TRAN -> DM	0.134	0.133	0.053	2.526	0.012

According to Table 7 findings, there are strong correlations between training, perceived value, and intention to use blockchain, as well as between those factors and intention to use blockchain. The study approved H1, H2, and H3 based on the findings. In addition, there are important connections between the intention to use blockchain and security and privacy, the intention to use blockchain and storytelling, the intention to use blockchain and disintermediation, and the intention to use blockchain and transparency. The study accepted H4, H5, H6, and H7 based on the findings. Additionally, there are important connections between digital marketing, narrative, disintermediation, and privacy protection as well as between transparency and digital marketing. Based on the aforementioned findings, H8, H9, H10, and H11 were approved by the study.

5. DISCUSSION

Many businesses are expected to greatly benefit from blockchain, but marketing has received very little attention. In this research, four areas are identified and analyzed using primary and secondary data collection to determine the value of each advantage, including security and privacy, storytelling, disintermediation, and transparency. This research was conducted to delve into the potential blockchain capabilities for marketing. Finding a greater knowledge for Predicting the impact of blockchain technology on digital marketing is the goal of the research and topic of discussion. Blockchain technology is a relatively newly developed technology (Gurzhii, 2022). Blockchain technology adoption in Pakistan is still in the early stages, and its full potential has not yet been realized (Ali, 2022) In order to demonstrate how these variables inspire the businesses to adopt blockchain technology in digital marketing. This study intends to analyze security and privacy, storytelling, disintermediation, and transparency concerns. By using a sample of Pakistanis this study aims to investigate how SMEs businesses intend to use blockchain technology for digital marketing. In order for firms to adapt to quickly changing circumstances and consumer expectations, this research uses the dynamic capability theory. They enhance resource management, resolving issues and decision-making. By integrating cutting-edge technology, adapting to new use cases, and offering a flexible facilities blockchain-based systems can adapt to these developments. Dynamic capabilities assist firms beat competition by promoting specialized outstanding performance behaviors, enhancing creativity and anticipating ideas. Dynamic capabilities must be deployed and used effectively for breakthroughs like blockchain technology to be successfully applied.

Additionally, the study's supportive factors training, perceived value and availability of resources are important factor of intention to use blockchain technology in digital marketing Therefore, small and medium-sized businesses should support their employees' intention to use blockchain technology in digital marketing by providing supportive factors such as training, perceived value and availability of resources that are believed to be valuable. The results of earlier research strengthen those of the current study which is supported by those findings (Kışı, 2022).

These considerations inspired businesses to use blockchain technology in digital marketing for the sake of transparency, disintermediation, security, and storytelling. In order to emphasize employee security and privacy, as well as to convey storytelling, remove intermediaries and increase transparency, small and medium-sized enterprises should emphasize their workers' intention to adopt blockchain technology in digital marketing. The findings of past studies support those of the current study, which is strengthened by those results (Shahbaz et al., 2021) and to propose a research model of factors influencing adoption of such a system. The research model is based on task-technology fit (TTF).

Furthermore, the study's findings show that blockchain capabilities like security and privacy, storytelling, disintermediation and transparency play a significant role in users' intentions to adopt the technology. As a result, businesses may educate their staff to use blockchain technology in digital marketing. The findings of the current study are supported by the findings of earlier investigations, which strengthen their findings (Shahbaz et al., 2021) and to propose a research model of factors influencing adoption of such a system. The research model is based on task-technology fit (TTF).

The key components of digital marketing are additionally including blockchain features including security and privacy, storytelling, disintermediation and transparency. Consequently, businesses can offer adequate resources for the adoption of blocking technology in digital marketing. The results of previous investigations confirm the conclusions of the current study, which is made stronger by these results (Trivedi & Malik, 2021).

6. IMPLICATIONS

The present study's results provide numerous contributions from a practical as well as a theoretical angle.

6.1 Theoretical contribution

Firstly, the study incorporates the theoretical contribution of dynamic capability theory in the context of Pakistani small and medium-sized businesses' intentions to adopt blockchain technology for digital marketing. The dynamic capability theory is an important theoretical addition to our study of Pakistani SMEs' use of blockchain technology in the context of digital marketing. This study highlights how an organization's capacity for innovation and adaptation in response to dynamic and unpredictably changing settings. Dynamic capabilities are essential for the effective implementation of blockchain technology by Pakistani SMEs using digital marketing. Secondly, the dynamic capability theory sheds light on Pakistani SMEs' capacity to recognize how blockchain might improve the efficiency, security, and transparency of digital marketing practices. These SMEs can detect market trends and the competitive environment, embrace the opportunity given by the adoption of blockchain, and then modify their marketing plans and operational procedures to successfully integrate blockchain. This might entail putting together cross-functional teams, training staff members, and forming alliances with IT companies. The dynamic capability theory also recognizes that the adoption of blockchain technology is a dynamic, continuous phenomenon. When using this technology for digital marketing Pakistani SMEs must constantly learn from their mistakes, polish their tactics, and adjust to shifting market conditions. This is consistent with the theory's principles of constant innovation and adaptation, ensuring that SMEs stay adaptable and responsive throughout their adoption process. In the end, the dynamic capability theory offers a useful framework for analyzing Pakistani SMEs' use of blockchain technology in digital marketing. It emphasizes how crucial it is for these SMEs to recognize, seize and adapt to technology breakthroughs so they can fully utilize blockchain's potential and maintain their competitiveness in the

rapidly changing digital environment.

6.2 Managerial contribution

When incorporating blockchain technology into a marketing strategy, businesses may pursue many approaches. At first, companies need to shift their perspective from primarily relying on the current centralized ad exchanges, particularly in cases when the results fall short of the projected return on investment. Digital marketing has come under fire for deceptive content, erratic pricing schedules, and problems with viewability and advertisement fraud. It is advised that companies set aside a small amount of their advertising budget for the purpose of testing a decentralized advertisement exchange and doing a long-term comparison with the centralized advertisement exchange.

By guaranteeing confidentiality, blockchain-based advertising systems can benefit customers. Blockchain privacy does not guarantee total data concealment; rather, users will have total choice over how accessible their data is to the system. As a result, this may contribute to the more meaningful realization of consumer-centered advertising, the initial component of smart advertising. Since data on the blockchain is transparent, blockchain-based advertising can guarantee the data-driven aspect of intelligent advertising for publishers, advertisers, and intermediaries. Transparency of data and a privacy-ensured ad distribution mechanism will thus be essential to the fully functioning and highly valid algorithmic-mediated part of digital marketing. In order to properly integrate new technology, managers should also seek to strengthen the technical skills of focus businesses and collaborate closely with its' employees that are creating the technology's dynamic capabilities after its adoption. Lastly, managers in a variety of businesses and sectors need to understand that blockchain has the ability to rebuild digital marketing and perhaps change the way that things are done today.

6.3 Limitation and future directions

Although the research makes a number of managerial and theoretical advances, it also has several drawbacks. We suggest some potential directions considering such restrictions. The study was completed quickly, and its results were only ever gathered once. Because longitudinal studies also assess the many behavior changes of the respondents' future researchers should perform one to better understand adoption behavior. Secondly, because the study's data came from Pakistani SMEs the conclusions are restricted to underdeveloped countries and do not apply to developed countries. Future academics should investigate these characteristics in any industrialized nation since their findings can provide a different viewpoint. Thirdly, this study included the dynamic capability theory to their framework; further studies should add more theories. Future studies should detail both inner and outer training to investigate what types of variables influence an employee's desire to use blockchain technology in Pakistani digital marketing.

7. CONCLUSION

The study investigates the adoption of blockchain technology in digital marketing in Pakistan, focusing on four key areas: security and privacy, storytelling, disintermediation, and transparency. The dynamic capability theory is used to understand how these factors motivate businesses to adopt blockchain technology. The research reveals that training, perceived value, and resource availability are crucial factors in the adoption of blockchain technology. Blockchain can create direct relationships between advertisers and publishers, reduce fraud, automate ad purchasing processes, and address data security and privacy. However, challenges persist, such as the need for more scalable systems and integration of marketing technology with various blockchain. The study suggests that managers should provide thorough training programs, allocate sufficient resources, and emphasize the value proposition of blockchain technology.

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