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Research

Impact of digital transformation on SME's marketing performance: role of social media and market turbulence

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Abstract
Despite the rising relevance of digital transformation, there is still a knowledge vacuum due to limited literature available on digital transformation. This study aims to examine the impact of digital transformation on the marketing performance of small and medium enterprises. This research seeks to fill this void by adopting the technology adoption model in order to explore how in a fast-changing technological environment, digital transformation plays its role in firm specific capabilities that are imperative for a firm to adopt, and how they impact firm's marketing performance. Combination of convenience sampling as well as snowball sampling was used to collect the data. Utilizing survey data from 316 small to medium-sized enterprises in the twin cities (Islamabad & Rawalpindi), Pakistan the results indicate that digital transformation has a positive influence on small and medium enterprises' marketing performance. This encourages businesses to take advantage of the opportunity presented by new digital technologies and industry-wide digitalization trends by adopting new technologies and improving their digital capabilities in order to increase their productivity, efficiency, and innovation as well as their marketing performance. Hence this study is a practical demonstration of how developing digital transformation may be used to develop novel digital products and services and thereby improve marketing performance that leads to the overall corporate performance. Finally, the study contributes to the literature by evaluating the proposed model that describes the relationships between digital transformation, social media marketing, market turbulence and marketing performance concurrently.

Keywords Digital transformation · Social media marketing · Market turbulence · Market performance · Small and medium enterprises · Technology adoption model

1 Introduction

Technology has altered business operations and consumer behavior since its inception [100, 129]. Different studies have highlighted the importance of technology to the business sector of the various economies. Success of the business is directly dependent on the technology as it is cost saving and a tool to competitive edge. Pakistani entrepreneurs are somehow contented about the technology they are using but it is because they have less information about the new emerging technology. It is also because these people are less prone to change. Hafeez et al. [68] have highlighted that lack of technological innovation and other factors that have caused small and medium industry to perform low. They are struggling for longer life and sustainability. Nineteen percent of SMEs are less than five years

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old and only 4% manage 24 to survive more than twenty five years. This reiterates the need for more. Yousaf et al. [148] in their study related to technology orientation in software sector of Pakistan acknowledges that Pakistani software-firms require not only a strategic, but also a proactive response, in order to deal with the dynamic changes taking place in the market. But they should also be ready to face disappointments while dealing with high technological obsolescence. For this, it is important for these firms to acquire more knowledge about the technology. Hence this is high time to study the impact, of digital, transformation, on the marketing, performance, of SMEs in Pakistan as it will not only help to address the misunderstandings prevailing in the market but also would guide through the challenges and resources required to adopt this change. Furthermore, it will help us to deal with the prevailing disappointment related to technology adoption and upgrade.

Technology has completely changed how businesses market their goods and services, do business, share information, and manage resources. Not only this but also the technology has significantly altered consumer behavior in terms of consumption patterns and given them the ability to participate in the purchasing process [36, 38]. Businesses must adopt structured and organized management control systems in a world that is always changing due to technology advancement [32]. These technologies encourage company growth by giving top management information that would not otherwise be possible through informal communication in such organizations. In fact, businesses employ new technologies often and base their judgments on the information at hand [59, 93, 103]. Long-term organizational objectives must align with the requirement to embrace new digital tools, or instruments for digital transformation to be effective. A new paradigm has been established in every facet of business as a result of the development of new technologies including block chain, artificial intelligence, virtual reality, big data, and robotics [66, 95]. Such transformation has evolved into a marketing catalyst, sustaining new marketing fads and archetypes, in marketing analytics and digital marketing. Social media's original function as a medium for social networking has been superseded in recent years by the advancement of digital, marketing. Instead, it has developed into a platform that allows companies to interact with their clients practically immediately and to actively participate in the creation of marketing plans [35, 81]. Customers may work with businesses as co-creators, in practically every element of the company process, including, developing products and services, creating value, and developing marketing strategies, particularly in digital marketing. Consumers can play the role of "broadcasters" and stop listening to marketers by adding user-generated content into digital marketing, exactly as in the past [36].

Today's businesses place a strong emphasis, on digitization, and data-driven, practices, which has shifted marketing toward a science-based approach and given marketers unrestricted access to insightful data about their business's performance, customers, and opportunities [121]. Today, regardless of a company's size or industry, digital transformation is an inescapable decision, according to [41]. However, small and medium-sized businesses may find that this change is far more pertinent to them (SME). SMEs are a crucial industry since they may contribute the most to GDP. SMEs nowadays must deal with the impacts of globalisation and technological advancement. As a result, developing additional competencies and having an entrepreneurial mindset are essential for success. SMEs with a strong online presence, are more, lucrative, survive, longer, and develop faster. An economy supported by SMEs, might be perfect to fully utilise the potential of new technology, since the business climate is now being altered by digital technology. SMEs should effectively adapt to the shift in consumer expectations, the regulatory environment, and dealing with the competition by utilizing technology advancements. This kind of business demands entrepreneurial skills. The presence of digital technologies is not only helping established organization but also benefitting small, medium enterprises and new ventures. It has not only played a key role in the advent of new business models like sharing economy and platform businesses but also helped enterprises to gain competitive advantage over rival firms and introduced disruptive technologies [53].

Small and medium-sized businesses (SMEs) are important economic players in every country's economy. They are the seeds for future huge enterprises, while talking about the economic growth and development it would be unfair to overlook the importance of SME sector in any country. Same is the case of Pakistan. SMEs in Pakistan lie in the number of employees, up to 250 individuals, while the paid-up capital of up to 25 million rupees, as well as the yearly turnover of up to 250 million rupees [104, 117]. According to an estimate SMEs constitute around 90% of all other enterprises in Pakistan. They make 80% of the non-agricultural labor force and their share in the yearly production of the GDP is roughly 40%.

In evolving economies, policymakers at all levels have been thinking about the crucial role of SMEs in producing employment and prosperity and boosting creativity [112]. The vibrant role of small and medium enterprises (SMEs) in developing economies, through which their aims of growth and wealth generation can be acquired, have hardly been recognized. Hence studying SMEs can improve our understanding regarding their needs for growth, development, etc. Furthermore, Scientists, experts, and policymakers would be able to create effective support plans for SMEs with the use of these types of information [112].

SMEs make up the majority of the economy. In Pakistan, roughly 90% of all businesses are owned by foreigners. They employ 80% of the workforce. Non-agricultural work force and their yearly wage that share the gross domestic product (GDP) is about 40%. Small and medium enterprises are constrained by available resources, unlike large firms in the formal sector. Due to this inherent characteristic of a SME, a structure must be established through which it may get support for a variety of business operations, including marketing, financial management, technical progress, and training and development of human resources [104]. Despite, their economic, importance, Pakistan's SMEs have a number of flaws, that substantially hinder, their functioning. The inadequate company, information structure, lack of strategy and planning, and lack of human, capital necessary in current age business, are among, primary flaws [43]. These kind of inefficiencies may be eliminated, and the existing situation of SMEs can be improved, by bringing in new ideas hence this way the current state of SMEs can be lifted by permeating the advanced digital technologies in their daily operations [76].

Digital transformation has not only improvised product development which was slow and costly previously in industrial era but also has led to reinvention of sales and distribution channels. Now we can see every business is promoting their products and services using social media channels as surviving without social media marketing has become almost absolute for businesses, which has led to the requirement of new skills, techniques, methods and behaviors [111]. Social media also acts as a crucial mediator in order to engage the customer, digital outreach and brand visibility that amplify the affects of digital transformation of marketing performance of the firms. Digital transformation has really been empowered because of the social media dependence of customers and it's extremely important for any organization to engage in its social media activities to attract the clients and bigger the firm size is more important is the use of technology to get more insights of the customer behavior, interests etc.

Market turbulence is a term used frequently to describe the unexpected business circumstances that exist in the technology sector nowadays. Authors agree that market turbulence is a instability in the market that may be due to several factors like a country's economic, political, legal or perhaps social policies [145]. Hence market turbulence increases the ambiguity and risk of a company's business process. [12]. Market volatility is a key component that increases the level of uncertainty and risk in the environment for business operations and the fundamental link between a company's marketing strategy and its effectiveness. Uncertainties and difficult-to-predict developments characterise the chaotic corporate environment [12].

This increase in environmental concerns creates both possibilities and challenges at the same time, which has an impact on the business strategies used by firms. According to Wang et al. [145], market instability is a crucial environmental factor that affects how well the lively skills operate in terms of organizational marketing. In keeping with this, Maletič et al. [99] go into further detail on how an unpredictable business climate affects the relationship between sustainable practices and organizational marketing success. Hence, studying and determining the performance of SMEs is essential given the significance of these businesses to regional economies. Such research aids in the development of commercial and governmental SME assistance initiatives. As a result, it's critical that the performance evaluation techniques employed can offer a complete insight of SME effectiveness.

Digital transformation (DT) has transformed from a technical opportunity to a strict need in this age [89]. With dynamic and fast changing environment organizations are really surrounded by the questions whether digital transformation help organizations to increase performance or not and if so to what extent, what are the capital, asset and technological requirements and what are the risks involved etc. DT research is frequently highly specialized and restricted to specific fields. The number of publications that yearly provide findings from many fields and points of view is now fast increasing. As a result, it is now exceedingly challenging to understand the greater field of DT [70, 72].

Pakistan's government is taking initiatives towards a digital economy however, because of the costs, technology, training, and other factors, organizations are keen to know if they should opt digital technologies and proceed towards digital transformation. It is yet unknown what approaches, behaviors, attitudes, and actions people working in SMEs must adopt in order to succeed in the digital environment. There are several organizational and individual factors that may support the uptake of digital transformation in firms. Only few studies have been directed to comprehend these factors [116]. Furthermore, digital transformation is the need of time as world is converting digital and no business can survive without this. Although digital transformation helps SMEs improve their performance but to what extent it really depends upon their marketing approach, especially social media marketing, while researching the importance of market turbulence in the overall process is critical. Organizations now days are paying huge attention to understand if digital transformation will lead to a higher marketing performance and what are possible factors that can help to elaborate this relationship. Hence studying SMEs, would improve, our understanding, regarding their needs in admiration towards growth, and development, etc. These kinds of understandings-would enable specialists, and policy, makers to frame sound support, strategies for SMEs [112].

Although it's clear that implementing new technology is a difficult process, it becomes even more important to consider each individual component that influences the process when upgrading current resources and technology in order to achieve greater economies of scale and higher performance. Pakistan is a growing nation that is undergoing a digital transition right now. Hence this is high time to produce studies on the topic of digital transformation and it's impact of the marketing performance of SMEs as there is still a vibrant deficiency of studies on this topic [65, 78].

Zhang et al., [150] asserts that digital transformation (DT) improves the performance of small and medium enterprises, however, a thorough study has not yet been done to determine the real impact of digital transformation on marketing performance. Even though it is obvious that digital transformation improves performance. However, the impact of digital transformation on SMEs' marketing performance has not yet been well understood and investigated. Additionally, it is interesting to see the role of marketing performance as a mediator and market turbulence as a moderator in the whole process. This research aims to examine the impact of digital transformation on the marketing performance of SMEs. Secondly it investigates the role of social media marketing as a mediator between the digital transformation and the marketing performance of SMEs. This study also figures out the role, of market-turbulence being a moderator, between the digital transformation and the marketing performance of SMEs. Despite the growing significance of digital transformation, a meagre amount of literature is available on marketing performance of SMEs. Many SMEs struggle for digital adoption because of limited strategic direction and constraints in form of resources. SMEs Thus, this study contribute to the literature by filling this gap and highlighting the impact of digital transformation on marketing performance.

The study is divided into 5 sections. Literature review is provided in Sect. 2 which includes separate literature on each variable i.e. digital transformation, social media marketing, marketing turbulence and marketing performance. Methodology is discussed in Sect. 3. A detailed discussion on pretesting, pilot study, sample characteristics, demographics and measures of constructs is also a part of this section. The discussion on data analysis and findings are presented in Sect. 4, which includes data analysis techniques, normality analysis, reliability analysis and descriptive and results of regression analysis. Finally, discussion, conclusion and future directions are given in Sect. 5.

2 Literature review

In order to keep up with their competition and satisfy consumers, SMEs are currently starting to explore for simple solutions to apply digitalization procedures [105]. It is clear that thinking of the digitization of SMEs as an organizational process that entails both gradual and dramatic changes made possible by digital technology is a good idea. One element of digital transformation is the capacity to change a business model in response to new technologies and socio-technical breakthroughs that affect operations and the customer experience [64, 82, 125]. To lead SMEs and help them profit from these digital transitions, managers may need to develop a number of skills, such as digital media communication, worldwide networking, swift information interchange, etc. As a result of having to deal with rapid change, competition, and technology, the environment will become considerably more competitive and unstable [77].

SMEs play a vital role in the economics of countries as economic artists [147]. They are the seeds for future large organizations and are often a significant source of employment growth [40]. Due to their flexibility and capacity for swift and effective integration of discoveries resulting from the business' expansion operations, SMEs typically exhibit higher levels of innovation than bigger corporations [143]. According to research, SMEs that participate in innovative activities outperform their competitors. Studying SMEs can improve our comprehension of their requirements for growth, development, etc. Scientists, experts, and policymakers would be able to create effective support plans for SMEs with the use of these types of information [105]. SME growth is crucial for every nation, but it is especially important for developing nations. To boast about their exports and revive their economy, several nations rely on SMEs [39]. Over the past twenty years, SMEs have been crucial to growing economies.

2.1 Digital transformation

The digital era has accelerated organizational environment evolution, making them more chaotic, unpredictable, and complex than in the past. Businesses need to react and adapt to their environment more than ever due to the quick changes in competition, demand, technology, and legislation [137]. The pressure on businesses to adapt their business strategies to environmental technological changes has significantly increased with the emergence and growing importance of new digital technologies like Social Media, Cloud Computing, Big Data and Analytics, Embedded Devices,

3D-Printing, the Internet of Things, and Artificial Intelligence [137]. They are profoundly changing how businesses operate, the nature of competition, customer behavior, and expectations, as well as how business is conducted, goods are produced and delivered, how people are employed, and eventually, the nature of whole sectors [54]. Therefore, in recent years, practitioners and academics have been closely observing the phenomenon of digital transformation, notably the levers that are essential to success and the obstacles that must be addressed.

The term "digital transformation" presently has no accepted definition [125]. A substantial change in an organization's strategy, structure, or power dynamics is referred to as a "transformation" [64]. Digital transformation is the process of adjusting to a quickly evolving digital environment in order to meet the digital expectations of clients, employees, and business partners. This adoption procedure needs to be deliberately thought out, started, and completed [86]. According to McKinsey, digital is more about how companies run their operations than it is about any particular procedure [146]. Three categories may be made out of what they mean by "digital": creating value at the cutting edge of business, enhancing processes that directly impact the customer experience, and creating foundational capabilities that underpin the overall company plan. The digital transformation of a corporation involves many different aspects, with technology integration being only one of them. Digital technology must also create value for customers, the business, and other important stakeholders [125]. Companies must focus on two complimentary activities for a successful digital transformation: redesigning consumer value offerings and reforming business processes. Digital technologies are being used in business operations to improve consumer interaction and cooperation [130].

Another way of looking at the definition of "digital transformation" can be that it is a disruptive or progressive change process [86]. It starts with the adoption and use of digital technology and moves on to the implied fundamental transformation of an organization. Many definitions of digital transformation were analyzed and contrasted [29]. Another thought on the topic emphasizes that, in order to produce value, a complete change of a company is essential when employing and embracing digital technology [74].

Some authors relate the idea of Industry 4.0 to digital transformation. To manage complex systems in this way, Industry 4.0 is the intelligent networking of people, things, machines, and communications [45]. Cyber-Physical Systems (CPS) or Information and Communications Technology (ICT), which integrate the physical and digital worlds and transmit data in real time along the whole value chain, are at the center of Industry 4.0. In contrast to previous industrial revolutions, the Internet of Things (IOT) is a new paradigm that aims to create intelligent, digitalized, and decentralized value networks [136]. Using the fourth industrial revolution as an analogy, Cerezo-Narváez et al. [34] created Industry 4.0, also known as Strategy 4.0, which emphasizes collaboration between research and industry by fusing skills and knowledge through online services [34]. The development of the digital organization, whose most volatile asset is the asset of artificial intelligence and computer capital, is the result of digital transformation, as evidenced by the continuous rise in automated information and the creation of digital commodities [131]. While the role of digital transformation in enhancing the green innovation in SMEs of Yeman has been studied by Al-Swidi et al. [10, 11].

Businesses now days, have been driven to accelerate their Digital-Transformation (DT) [26]. One of the primary difficulties and priorities for today's businesses is to take use of the potential provided by DT. Recent business media have seen a rise in the use of the term "digital transformation" (DT) to describe the disruptive or transformative effects of digital technology on businesses as well as how existing businesses may need to fundamentally reinvent themselves to succeed in the new digital environment [142]. Recent studies have shown that both theory and practice of DT still need improvement [108]. It's still unclear how to create a digital transformation plan for firms. The creation and modification of a digital transformation plan across organizational levels is explained by a well-defined DT framework [108]. Additionally, the emergence of a wide variety of innovative and potent digital platforms, infrastructures, and technologies has profoundly changed innovation, with implications for organizational structure and public policy [107]. Innovation processes have been significantly impacted by digital technology, changing how goods and services are created [107].

Libert et al. [94] made a distinction between digital upgrade, which involves using digital technologies to enhance a firm's business processes' efficiency and effectiveness, and digital transformation, which entails using digital technologies to fundamentally alter a company's overall business operations, value creation, and occasionally new product offerings. Through digital transformation, businesses may incorporate digital technology into many elements of their operations and include customers in the creation of new digital products [16].

Digital Transformation (DT) has become a crucial topic for practitioners as well as researchers [29, 55]. At a high level, digital technologies are causing substantial changes in society and industry that are happening quickly [3, 98]. Developing "strategies that embrace the consequences, such in the form of digital transformation and bring in improved operational outcomes" has been said to be crucial for firms looking to innovate with these new technologies [75]. The research has shown that technology is a piece of the complicated jigsaw that has to be solved for companies in order

to remain competitive in the digital era, if we look at the prior work and discoveries from the past [29]. Along with structural, procedural, and cultural changes inside businesses [87, 128], it is crucial to develop this competence in order to develop new avenues for value generation [133]. We now lack a thorough understanding of both this occurrence and its repercussions [64, 86].

2.2 Marketing performance

The companies need to pay great attention to their marketing operations because it is the key to survival in the current competitive climate. There is only one real definition of a company's mission, in Peter Drucker's words: "to build a customer." There are just two essential functions for a company: marketing and innovation, as the purpose of business is to create a customer. Everything else is a cost; only marketing and innovation provide results [49]. Performance may be measured in terms of effectiveness, efficiency, and flexibility. The view of performance may also be found in marketing, which is the result of a company's marketing activity. According to Ghauri et al. [62] marketing performance is a term that is used to evaluate a company's performance as a reflection of its success in the market. In order to adapt to market competition, Knight [88] asserted that, in addition to the Human Resources element, organizations must recognize that strategy plays a critical part in achieving the company's success. Without the correct plan in place, the firm will struggle to stay afloat in the face of Knight's [88] competition, hence if a firm is not engaging it in adopting latest trends of innovation and strategies like digital innovation would struggle at producing better marketing performance in comparison to those who are actually following it in the market. Asad et al. [20, 21] studied the mediating role green innovation, moderating role of resource acquisition with firm performance. In case of Jorden, Kanaan et al., [85] find that open innovation activities significantly affects overall performance of firms. Whereas Asad et al., [22] indicate that besides promoting the business ecosystem, environmental values advances new business environmental performance. Al Koliby et al. [6, 7] studied the role of entrepreneurial culture, innovation capabilities among other factors in propagating sustainable competitive performance SMEs in manufacturing. Similarly AlKoliby et al., [9] examined the impact of digital transformation and knowledge application on innovation and performance of SMEs in case of emerging markets. Their results postulate the significant mediation of innovation firm performance. Whereas the entrepreneurial competencies significantly promotes innovation and sustainable performance of the enterprise [6], Mokbel [6, 7]. Another important aspect related to the SMEs is entrepreural leadership which is significant for boosting the supply chain performance [10, 11].

The marketing performance review is discussed by Franco-Santos and Otley [58], who explains that it is a clarification of the ideas of performance management and performance measurement. Performance management may be conceptualized broadly as a process that includes sub-processes like performance planning, measurement, reporting, and decision-making in order to improve marketing performance more fully and effectively to encourage higher sales. The efficacy of value creation, which is the consequence of a combination of enhanced inventive abilities and in-depth knowledge of market dynamics, is assessed using marketing performance as a barometer. Different professionals use various criteria to assess the efficacy of their marketing strategies. Vorhies and Morgan [144] claims that one factor usually used to gauge a company's strategy's efficacy is marketing performance. Being digital has had a significant impact on marketing, according to [48]. New marketing possibilities are now available because to features of digital media including engagement and more accurate measurements. The contact that may occur on social media and even directly on adverts changes everything. Similar to live broadcasts, influencers can talk about a product while employing live advertisements on social media. Viewers may now take part in the live stream by submitting comments, making recommendations, and even getting answers rather than just watching a social influencer. The breadth and nature of how marketers may approach their audiences are altered by the amount of participation and connection that is now possible in 2019 and was just not possible before the advent of digital transformation.

Unbundling, the first wave of digital disruption, started about 1995. Readers of newspapers have migrated to Google, Craigslist, and Yelp from where they once relied on them for news, classified advertisements, and restaurant reviews. Teixeira said that "startups at the time chose to unbundle the newspaper." The start-ups were only offering their customers a single component of the product since it was unbundled. The second wave, known as disintermediation, started in the early 2000s and harmed both physical and digital goods. Instead of using a travel agency to arrange hotels, flights, and tour activities, customers took charge of the process. He said, "You, the consumer of travel services, started approaching the suppliers directly. It looks that the third wave of disruption has come after 10 years. According to Teixeira, decoupling is crucial because it affects every step of the consumer's purchasing process, including evaluating, choosing, buying, and consuming.

The "third wave" of digital disruption has been said to have slammed our economy with this most recent one, and many experts worry the effects will be considerably worse than they were before. Few organizations have had their fundamental operations disrupted, according to Moeller et al. [101], despite the evolution of numerous behaviors, goods, and services. However, this is about to alter. The third wave of digital disruption is expected to connect new technologies to a greater degree than previous waves, which will result in a far more fundamental impact. The third wave of disruption is presently in motion, changing businesses' marketing and go-to-market plans and having a variety of negative economic effects. The primary force behind innovation and change in all facets of our economy will be digitization, or the growing fusion of the real and virtual worlds [83].

According to, Lamberton and Stephen [92], marketing performance is a measure of a company's marketing program's success. Marketing is done online, or so-called, in today's globalized period. Face-to-face communication is no longer used in e-commerce. Ecommerce marketing may help with product promotion both online and offline. Both on a national and international scale E-commerce have come a long way. Indicators: digital purchasing viewpoint, online purchasing perspective from the standpoints of communication, service, and business from the standpoint of the process. Practices in e-commerce will be able to SMEs' marketing reach should be expanded, and demand should be increased. maintain and build distributor relationships customers and suppliers in a timely and efficient manner [120]. Better marketing performance is influenced by ecommerce which is the outcome of digital transformation. Hence Online marketing or e-commerce will be able to improve the situation of firms marketing performance as more the organizations will spend on their online marketing activities like social media marketing they are more likely to achieve a higher reach to customers and better marketing performance [120]. That brings us to our hypothesis:

H1: Digital-transformation (DT) has positive, impact on the marketing performance of SMEs.

2.3 Role of social media

Social media has a significant impact on how we create, consume, connect, and cooperate. They stand for one of the most revolutionary effects of information technology on the industry. Social media have changed how businesses interact with the public and the marketplace by opening up a whole new universe of opportunities and difficulties for every part of the business, from operations and marketing to finance and human resources. Social media is crucial to recent developments that have significantly altered customer preferences [139], peer-to-peer marketing, focused marketing strategies, and demand prediction [14, 15, 23, 30].

Social media has the power to change customer behavior extends beyond its impact on sales and marketing. Social media are also changing how businesses interact with their workforces, enabling them to forge flexible relationships with the available remote talent [17], crowd source innovative ideas [47], or even engage in micro-outsourcing. Social media has the ability to revolutionize how information, knowledge, and expertise are shared inside enterprises [28], which would speed up the creation of new goods and services [151]. According to Dellarocas et al. [46] and Kwak et al. [90], social media has completely changed certain businesses while also redefining others. What we have seen thus far is really the tip of the iceberg in terms of what is possible and what is yet to come. This particular worry was primarily created to encourage creative analyses of the connection between social media and the digital transformation of businesses. The effects of social media spur study in a wide range of fields, such as economics, marketing, computer science, sociology, and strategy, among others. Given the long-standing heritage of the information systems (IS) discipline to pursue these problems, the cross-functional and cross-disciplinary character of the study points to a crucial role for the IS academics in the social media domains.

The term "social media" is used when referring to social media marketing since it stands for "Collaborative online applications and technology that enable participation, connection, user-generated content, information sharing, and collaboration within a community of users" [73]. Social media is frequently linked to involvement, engagement, teamwork, and information sharing on websites like Facebook, Twitter, Instagram, and Snap Chat, among others. Recent definitions of social media usage include "the capacity to utilize social media to experiment with and find new ideas, as well as to apply and utilize new ideas" by Griful-Freixenet et al. [67]. According to Freixanet et al. business owners and managers must engage in creative, pro-active, and risk-taking behaviors as a result of the growth and adoption of social media. Additionally, Tajudeen et al. [135] assert that because social media is a freshly developed interactive technology that allows for two-way and open communication, businesses must act entrepreneurially and be prepared to accept both the good and bad effects of it. SME managers also use social media to keep an eye out for opportunities, employ original thinking, and comprehend stakeholder needs [50]. A few corporate activities that could benefit from

social media platforms include brand management, supply chain management, customer relationship management, innovation management, and new product management.

Businesses utilize social media for a range of purposes, including as communications, shareholder engagement, customer service, public relations, marketing, problem-solving, branding, visibility, and advertising [8, 109]. Schniederjans et al. [127] claim that SMA improves communication, fosters collaboration, and raises social involvement among businesses and their partners, all of which improve corporate success. The effectiveness of any organization's marketing has also been proven to be significantly impacted by social media marketing, according to several studies. Social media has helped SMEs operate better in a number of areas, including customer service and connections, accessibility and information sharing, and brand visibility [115]. Additionally, it has helped SMEs save marketing expenses and increase customer-based operations. Additionally, Tajudeen et al. [135] found that social media use has a significant influence on the marketing performance of SMEs in terms of marketing activities and customer interactions. Similar to this, Qalati et al. have shown that SME environments in developing countries benefit greatly from social media marketing activities in terms of improved interaction, reputation, connections, visibility, and customer service. Investigation revealed, however, that social media use had a non-negligible effect on business marketing operations and performance.

Few academic studies have adopted a firm-level approach to quantitatively examine the usefulness of social media in improving organizational performance [56, 60, 61]. As noted by Galati et al. [60], very little research has been done that examines managers' perspectives of the usefulness of social networking sites for the aim of enhancing corporate performance. In particular, many studies in the past have followed a theoretical viewpoint. Furthermore, there aren't many empirical studies that have looked at how utilizing Facebook for marketing and business might affect an organization's performance. Previous research has demonstrated that businesses can benefit from using social networks, particularly Facebook, in a number of ways, including increased brand value [79], increased sales, social commerce, innovation and new product development processes [114], knowledge sharing [106], and customer relations management [138]. In addition to what was stated above, thanks to cutting-edge transactional features, Facebook is no longer just a marketing and communication tool. Instead, by foraying into advertising and e-commerce, Facebook is now able to serve as a new and alternative method of engaging with customers not just locally but globally and directly selling goods. A new phenomena known as "social commerce," often known as Facebook commerce, has emerged from this new perspective [63]. These studies show that Facebook may assist businesses in achieving a range of marketing goals, including branding, advertising, customer relationship management, marketing analysis, and sales, among others. Therefore, we suggest the following:

H2: Social Media Marketing mediates, the relationship, between, digital-transformation, and firm's marketing performance.

2.4 Role of market turbulence

Market turbulence is a term used frequently to describe the unheard-of business circumstances that exist in the technology sector nowadays. Market turbulence is defined as contingent elements, which include uncertainties and variances that are typically challenging to forecast. Market turbulence is another term for the rate of change in consumer preferences within a sector [113]. Market volatility is a key component that increases the level of uncertainty and risk in the environment for business operations and the fundamental link between a company's marketing strategy and its effectiveness. Uncertainties and difficult-to-predict developments characterize the chaotic corporate environment. This increase in environmental concerns creates both possibilities and challenges at the same time, which has an impact on the business strategies used by firms. According to Wang et al. [145], market instability is a crucial environmental factor that affects how well the lively skills operate in terms of organizational marketing. In keeping with this, Maletič et al. [99] go into further detail on how an unpredictable business climate affects the relationship between sustainable practices and organizational marketing success.

A frequent and unexpected external factor known as "market turbulence" has an impact on an industry's products, services, technology, competitors, and customer demand. Markets in turmoil are frequently more unpredictable, volatile, and unstable [149]. Market volatility increases how difficult it is for managers to make decisions. Complexity and turbulence increase the chances of crises, but they also raise the likelihood of success if businesses are well-prepared and take the necessary steps when they become necessary. To prevent any unintended issues, businesses must be well informed and ready for the challenges of market volatility. Ta'Amnha et al., [134] has identified market turbulence as one of the significant moderating factors affecting firm performance. However, Sulaiman et al., [132] studied the moderating role market turbulence over the effect of firm performance by developing framework that takes support from contingency

perspective. Their results indicate the significant role of market turbulence on entrepreneurial marketing performance of the firm.

A turbulent environment is characterized by quick changes and a high degree of uncertainty, which enables enterprises to break through established industry barriers. In a chaotic environment, leaders innovate with information while taking changing client expectations into consideration. Sustainable leaders inspire their team members to be innovative and to share their knowledge and ideas. Due to market instability, typical industrial edges must be constantly modified, and customer tastes for products must also alter [51]. Increased consumer awareness of green products and environmental problems has altered consumer choices. The creation of sustainable products and services is necessary as consumer concern about environmental damage and energy usage of the items they use on a daily basis grows. A competitive market creates opportunities for sustainable practices; otherwise, a company's market share may suffer [51]. Because of this, businesses must innovate on a budget and cater to customers' shifting preferences. Technology turbulence causes technologies to become outmoded, and new disruptive technologies replace them. With the use of such technologies, leaders may adjust their company strategy, improve their products, and increase their market share. Simply said, when market and technological volatility exists, the effects of sustainable leadership on frugal innovation are exacerbated.

According to three theoretical perspectives, market volatility may restrict the effect of company innovation on performance. First, according to the law of required variety, successful businesses would adjust to new circumstances in order to properly react to environmental changes. Because customer needs are always changing, businesses must constantly adapt their goods and services as well as their procedures. Innovative businesses are more likely to develop unique tactics in order to take advantage of clients' rapidly shifting expectations [24] and to snare new product-market niches [97]. A company's capacity for innovation is increasingly essential during periods of extreme market instability in order to fulfill the evolving wants of customers [123].

The ability of a corporation to innovate is likely to be the strategic mechanism by which it responds to changes in the markets it serves, as noted by Rhee et al. (2010). Companies need to be more inventive in order to engage in new activities and function well when there is a lot of market volatility [80].

With a few notable exceptions, the majority of research on company innovation has not examined the market's moderating impact. Regardless of the level of market volatility, corporate innovation increases company success, claim [80]. This result, however, seems ambiguous because this subject hasn't been extensively studied in different research scenarios. As a result, the possible moderating effect of market instability on this link merits further exploration in a variety of scenarios. While scholars have been interested in market turbulence and it's role, its impact has been regarded as ambiguous, and further research into its genuine impact is needed [33]. As a result, market turbulence was only confirmed as a moderator on a case-by-case basis. That brings us to our third hypothesis:

H3: Market turbulence moderates the relationship, between, digital-transformation, and firm's marketing-performance.

2.5 Theoretical model

We are living in the age of technology where the inception of emerging technologies is at a high pace. New technologies are being introduced every single day, hence a new challenge i.e. what technologies should be accepted and what not to. One of the best models in this situation that often the researchers use is the technology acceptance model (TAM) that has recently gained a very significant spot in teaching and learning both areas [118]. Researchers have emphasized a lot up the necessity of inclusion of TAM in the latest research models as it will enhance our understanding of how the new technologies are making an impact in the literature [126].

The TAM was originally originated from the Theory of Reasoned Action (TRA) [52]. As well as the Theory of Planned Behavior [69]. In order to come up with a reliable model, Fred Davis went ahead and he picked the TRA and came up with the new model as the TAM [44]. He proposed that the main use of a system is infect a behavior that's why TRA would fit in the situation to explain the situation better. According to TAM [44] user's motivation is mainly based upon three factors i.e. the use, the perceived effectiveness and the attitude towards employing a technology or certain model. Davis hypothesized that the user attitude concerning the system was a critical factor for either using or rejecting the system. The perceived usefulness has been defined as the extent to which a person considers utilizing the specific system will improve the job performance, while the extent to which a person believe employing a certain system would be free of the efforts is termed as the perceived ease of use [44]. During subsequent experimental phases, the Model has been refined to include more variables while altering the basic associations. Correspondingly, other investigators have suggested various additions to TAM. New determinants with substantial impact on the fundamental variables are continuously

disclosed. Hence, with the passage of time TAM has emerged as a key model in understanding determinants of human behavior in relation to future technology acceptance or rejection.

In order to conduct this study we have used Technology Adoption Model (TAM), introduced by Davis [44]. However, if we review the previous literature on digital transformation, we discover that the resource-based theory has been the most frequently used theoretical framework in studies on digitalization and information technologies. This is primarily due to the fact that it enables evaluation of the relationship between information technologies and the strategy adopted by businesses and how their performance improves with the use of these technologies [140]. Although connected with and related to information technology, there are other theories that offer a better framework for analyzing digital transformation, [44], for instance the Theory of Reasoned Action (TRA) by Ajzen and Fishbein [5] which primarily emphasizes volitional behavior and further excludes non-volitional i.e. those requiring special skills and resources, or cooperation from others, or may be a unique opportunity are excepted, is one such theory. However, the advantages or benefits of the digital transformation, particularly its level of execution, are associated with the degree to which the human capital of the organization, even SMEs, adopts information and communication technology [141].

Davis created the Technology Acceptance Model (TAM) [44]. In this model the major emphasis on two dimensions is used to define TAM as the usage and behavior of information systems. Firstly, the perceived utility, which translates into how much a person, thinks using a particular system would increase their performance; second, the perceived ease of using the system, which largely refers to how much a person, thinks utilizing a certain system won't need any effort. As a result, TAM evaluates the following factors: perceived utility (PU), perceived ease of use (E), perceived attitude (A), and perceived behavioural intention (BI) (Parreira et al., 1987). The attitude dimension (A) and the behavioural intention (BI) are influenced by the sense of utility (U) and the perception of ease of use (E) [141]. Although the U and E are distinct variables in this model, they are interconnected, which means that a person's perception of the usability of the information system is impacted by how readily it can be utilized.

Furthermore, Davis et al. come to the conclusion that the U affects usage behavior more so than the E. The U is also commonly mentioned as the best measure of technology acceptance and use [102]. It should be stressed that the U assesses how much a person believes that employing technology will improve their performance, whereas the E gauges how much they feel that the information system is easy to use [37]. The BI of utilizing this technology is positively impacted by this user's perception.

Additionally, contended that a technology will eventually be embraced if it is thought to be valuable. Last but not least, this strategy considers how mindsets impact BI (A). Attitudes are influenced by the user's assessment of the technology's usefulness as well as the U. (E). In other words, attitudes are created based on usefulness and operationalization, which then influences action [44]. Therefore, ideally, this model would assist how digital transformation impacts Pakistani SMEs' marketing effectiveness as TAM provide stronger grounds for understanding technology. TAM is an alternative to the diffusion of innovation theory which offers greater emphasis on innovation. Thus, TAM suits better on how SMEs perceptions of digital tools drive innovation. Therefore, this model is better for explaining how digital transformation impacts Pakistani SMEs' marketing effectiveness.

3 Methodology

This research was done on the Pakistani SMEs based in Rawalpindi and Islamabad in order to assess the effect of digital transformation on SME performance. Digital SMEs from the twin cities were chosen because Pakistan is transitioning to a digital economy, therefore, digital SMEs and their creative digital solutions are playing an increasingly crucial role in development and economic growth of Pakistan. Hence, it is crucial to concentrate on SMEs' expansion in Pakistan [1]. Furthermore, there is a compelling need to look into how digital transformation may assist SMEs in improving their marketing performance and, as a result, contributing to the GDP. The reason for selecting Pakistan specifically is because Pakistan is going through the transition of digital transformation as a result, we can see numbers of firms have turned digital and the rest are seriously thinking about it. For instance, Easy Paisa was launched by a leading telecommunication company which allowed users to deposit money and transfer it to others. Support is being provided at the governmental level where government has also launched several projects to support digital era and address the need of digitization leading to digital transformation [1]. For example, Digi-skills and E-Rozgaar are one of the few projects that offer training

to people to train them for freelancing. Besides that, increase in the number of technology incubators in the major cities of Pakistan is a sign that digital transformation is on the rise in the country.

Data were gathered from the top management, including supervising managers and CEOs as appropriate since they are more concerned with the use of digital transformation strategies and innovation practices thus they are more knowledgeable about these topics inside their firm. Data were gathered for the study using a questionnaire survey methodology. The sample size of 316 SMEs was selected using the general rule of thumb [25]. Through the use of a standardized questionnaire, the data was gathered. The purpose of the survey was to learn how managers view the digital revolution and how it affects SMEs' marketing capabilities. The questionnaire's layout was quite straightforward because it was designed to be completed quickly and easily. To make sure all the safety precautions were in place prior to data collection, we conducted common method bias, pre-testing, and pilot studies. The 5-point Likert scale, from strongly disagree to strongly agree, was used to gather the data. There were two main sections to the questionnaire. The first section covered demographic information, and the second section focused on the main research factors.

To test the hypotheses proposed, SMEs of twin cities i.e. Rawalpindi and Islamabad were chosen. Through the use of a structured questionnaire, the data was gathered. The study employed quantitative approaches to evaluate the relationship between variables by collecting and analyzing survey data as well as to provide the answers to the research questions [4]. The unit of analysis was the digital technology-focused SMEs that have recently adopted digital technology to measure the impact of digital transformation on the marketing performance of these firms. The main emphasis of this research was the SMEs as they are a very crucial industry actor since they may contribute the most to the GDP [91]. The researchers, economists, and academics have demonstrated that SMEs uplift economies' levels of scarcity, employment, growth, and R&D. SMEs support economies through boosting access to money, fostering social strength, and creating jobs [122]. It is also well known that SME development and growth are essential for the expansion, prosperity, and sustainability of the industry in Pakistan. Focusing on the growth of SMEs in Pakistan is vital. As a result, it is essential to concentrate on SME establishment and to lessen the phenomena of their failure [71]. SMEs that have a strong online presence normally tend to be more lucrative, survive longer, and develop faster. In order to swiftly adapt to the changing surroundings, SMEs should consider it vital to integrate, produce, manage, arrange and rearrange internal and external resources continuously [2]. In order to stay competitive and deal with the challenges of emerging technologies SMEs must revise their business models for the new digital era, the greatest SMEs are always continuously looking for the new fresh ideas.

3.1 Sampling and data collection procedure

We collected primary data from the employees of SMEs, including managers, CEO's Managing Directors and Supervisors located in Rawalpindi and Islamabad. The sample includes SMEs from Rawalpindi and Islamabad as they are key urban centers with significant economic activity. The twin cities have been selected due to diverse SME landscape, relevance to digital economy and access to modern infrastructure. Prior studies highlight the significance of regional economic diversity in SME studies [18, 19], [124, 132]. Moreover, the selection of respondents has been based on their involvement in decision making within their respective SMEs. The methodology employed in this paper follow established approaches in terms of mediation and moderation analysis as demonstrated by [18] which ensure methodological rigor. To examine the relationship of variables in an appropriate manner the data was collected by using a quantitative research approach. The population for this research was digital SMEs operating in the Rawalpindi and Islamabad region. The sample size was decided by adopting the rule of thumb of 10% [25]. Using convenience sampling and snowball sampling the responses were collected. Snowball sampling really helps while gathering data through the respondent referral network [119]. While convenience sampling provides us with the flexibility to gather the data through firms that are comfortable to share it at their own convenience [96]. In order to know the nature and impact of independent and dependent variables, a structured questionnaire was used to collect the primary data from the SMEs of Rawalpindi and Islamabad, Pakistan. The data collection process took roughly two months. Respondents were also requested to share the questionnaire with other potential respondents. In order to avoid the possibility of social desirability bias, the format of the email and cover letter offered the respondents to respond once they are comfortable. A cross-sectional data was obtained from 316 SMEs in the twin cities to evaluate the relationship between the variables by testing hypotheses.

The criteria for enterprises that were included in the sample were supposed to be local SMEs based in Rawalpindi and Islamabad. Numbers of employees were supposed to be over 10 and lower than 250 while the annual turnover was supposed to be over 20 million. The information was gathered through the acquisition of the firms' contacts. Islamabad and Rawalpindi chamber of commerce, SECP as well as Google directory were used to gather the contact details of the respondents. The potential responders were then sent emails with a cover letter and a link to the poll online, also the respondents were contacted through telephone calls, Whatsapp messages, LinkedIn messages and in person visits where required.

SPSS was utilized in this study for data screening, analysis and respondent firm profiling. Regression analysis, reliability analysis, descriptive analysis, and normality tests were used to assess the hypothesis. This research relied upon the quantitative method so a structured questionnaire was formed and distributed in the SMEs of Rawalpindi and Islamabad, Pakistan. The questionnaire had main six sections including a cover letter, demographics, digital transformation, market turbulence, social media marketing and marketing performance. There were ten different questions in the demographics section while digital transformation and market turbulence had 8 and social media marketing and marketing performance had 4 different questions each.

3.2 Common method bias

The self-report survey design and the fact that all the data was gathered from a single source prompted concerns about common method bias [84]. Therefore, procedural and statistical strategies were established in order to address this issue of common method bias effect [31]. During the data collection procedure, participants were given clear instructions and their confidentiality and anonymity was guaranteed. Furthermore, the survey was created such that all replies required almost the same amount of effort and time to complete the questionnaire, hence no confusing or ambiguous phrases were used [31].

3.3 Pretesting

The questionnaire was distributed to industry professionals so they may offer their opinions. In order to guarantee that we don't run into any problems in the future, they were asked to examine the questionnaire by completing the structured questionnaire and providing comments. The specialists gave their insight and input, which was promptly considered and critically considered.

3.4 Pilot study

We carried out a pilot study to verify the research's validity and dependability. A pilot research helped to clarify any potential ambiguities, ensuring that respondents would not be perplexed when responding and that there would be no perplexing questions [27]. Additionally, the 37 questionnaire results that were checked using the pilot test were examined for logic and consistency. This showed that the scales were accurate and that the data supported our theory. It also helped to determine that there were no further data problems beyond a few small adjustments. As a result, we were prepared to start gathering data.

3.5 Characteristics of sample

This study included the total of 316 SMEs based in Rawalpindi and Islamabad regions of Pakistan. Included in the sample, 9 percent of the respondents were female while 91 percent of the respondents were male. 10 percent of the responses of the data were received from the CEO's of the SMEs while 16 percent of the respondents were HOD's, 42 percent were the managers while the rest of the 21 percent were the supervisors. 20 percent of the data received was from the SMEs having up to 10 employees, 52 percent of the SMEs who responded were in the range of 11 to 50 employees, while 15

Table 1 Respondent's profile summary

Designation	No of respondents	%age	No of employees	No of respondents	%age
CEO's	32	10.13	1–10	64	20.25
HOD's	52	16.46	11–50	163	51.58
Managers	131	41.46	51–100	49	15.51
Supervisors	66	20.89	101 and Above	40	12.66
Team Leads	35	11.08	Total	316	100.00
Total	316	100.00			
Male Respondents	288	91	Female Respondents	28	9
Experience (Years)			Age of Firm (Years)		
1–5	131	41.46	1–5	74	23.42
6–10	89	28.16	6–10	72	22.78
11–15	77	24.37	11–15	88	27.85
16–20	10	3.16	16–20	37	11.71
21 and Above	9	2.85	21 and Above	45	14.24
Total	316	100.00	Total	316	100.00

percent of them were in the range of 51 to 100 employees however the rest of the SMEs who responded with over 100 employees were 12 percent. Similarly the experience of the employees who responded was, 41 percent of the respondents had experience in the current organization from 1 to 5 years, 28 percent had 6 to 10 years of experience, 24 percent of them had an experience of 11 to 15 years while 3 percent of them had experience between 16 to 20 years and the left over 3 percent had the experience of over 21 years. Finally taking about the age of the firms, responses received included 23 percent were in the age group of 1 to 5 years, again 23 percent of them were in the age range of 6 to 10 years, then 28 percent of the firms were in the age range between 11 to 15 years, while 12 percent of the firms were in the age range of 16 to 20 years and finally the left over 14 percent of the responding firms were in the age range of over 21 years. We can see the detailed summary of the respondent profile in the table below (Table 1).

4 Data analysis and findings

4.1 Data analysis

The data analysis was performed on the total set of 316 responses. After the collection of data, data was analyzed on SPSS Version 23. The hypothesized model was analyzed using multiple linear regressions. Total numbers of distributed questionnaires were over 1000 leading to 316 responses as a result that is 3 percent response rate is approximately. The data collection process took around three months' time. We tested the reliability of data first using SPSS and discovered the data was reliable.

The data was analyzed in two stages mainly. Replies with greater missing values and outliers were manually deleted in the first phase, leaving 270 responses. Descriptive statistics and Cronbach's alpha was used to determine the data's trustworthiness. Cronbach's alpha, mean, and standard deviation values are shown in Table 4 (Appendix A) along with

Table 2 Results of normality analysis

	Kolmogorov-Smirnov[a]			Shapiro–Wilk Sig		
Variables	Statistic	df	Sig	Statistic	df	
MP1	0.284	270	0.000	0.811	270	0.000
MP2	0.250	270	0.000	0.796	270	0.000
MP3	0.298	270	0.000	0.808	270	0.000
MP4	0.256	270	0.000	0.790	270	0.000

[a]Lilliefors significance correction, where MP is dependent variable, MP: Marketing performance

constructs provided in Table 5 (Appendix B). All items have Cronbach's alpha values within acceptable desired range which is over 0.07. Digital Transformation, Social Media Marketing and Market Turbulence were regressed against Marketing.

4.2 Normality analysis

The purpose of the normality test is to determine if the residual or invader variable regression model follows a normal distribution. Good data has a pattern that resembles the bell shape on the histogram graphic. The Kolmogorov–Smirnov and Shapiro–Wilk test is the data normality test employed in this investigation. If a significant value or probability is less than or equal to 0.05, then the distribution of data is normal, according to the criteria for testing one sample using a one-sided test. Table 2 provides a statistical evaluation of this distribution and its summary.

The results indicate that the data is skewed. The visual presentation of data can also be seen in Figs. 1 and 2. Figure 2 shows that the distribution of the residual data results in a bell-shaped histogram graph; in this instance, the residual data may be characterized as regularly distributed. To more clearly assess this condition, P-P graphs in Fig. 3.

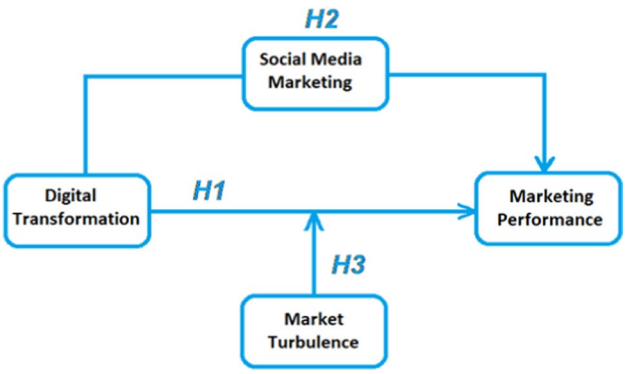

Fig. 1 Hypothesized research model

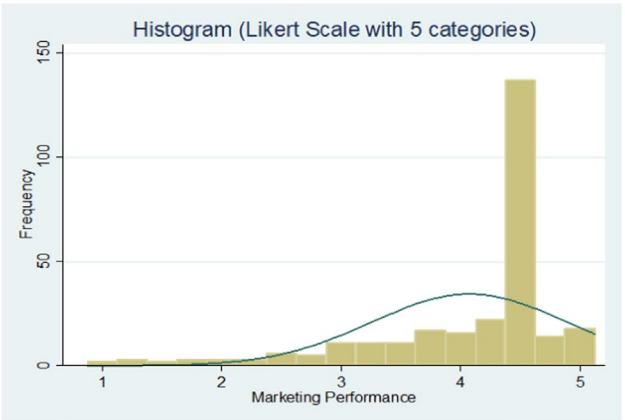

Fig. 2 Histogram chart. Detailed presentation of data in the form of normal distribution, histogram chart

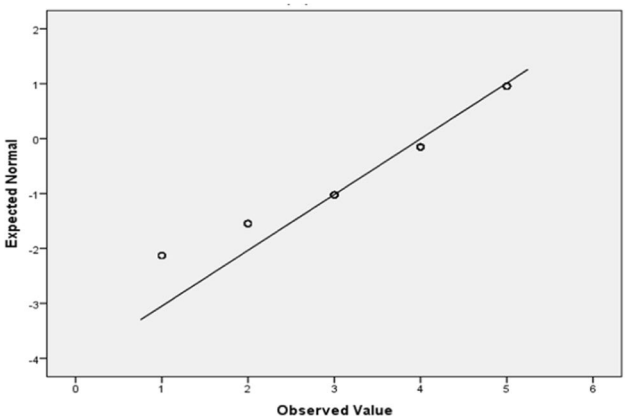

Fig. 3 Normal P-P Plot

4.3 Reliability analysis and descriptive

In order to assess the internal consistency of the data, we conducted the reliability analysis as to assess the data's internal consistency: Cronbach's alpha and composite reliability [57]. The minimum threshold value of should be above 0.7 specified [110]. Results of the reliability analysis exceeded all latent variables' Cronbach's alpha values, indicating excellent internal consistency. All composite reliability values are more than the minimal threshold value of 0.7, which indicates that composite reliability is more dependent on the actual loading score of a construct [110]. Appendix A provides the detailed demonstration of descriptive and reliability analysis data.

4.4 Results and discussion

In order to validate the proposed research hypotheses a multiple linear regression was performed. This study used three independent variables i.e. Digital Transformation (DT), Social Media Marketing (SMM) and Marketing Turbulence (MT) and one dependent variable i.e. Marketing Performance (MP). In order to understand the level of significance of all different variables and the impact of independent variable on the dependent variable the regression analysis was conducted. The results prove that all three independent variable i.e. Digital Transformation, Market Turbulence and Social Media Marketing have a positive impact on the dependent variable, i.e. Marketing Performance and the significance level achieved in all three cases is below 0.05 ($P < 0.05$) while it's also important to note that the level of significance achieved in case of Digital Transformation was 0.025, for Market Turbulence was 0.011, and for Social Media Marketing was 0.000. The result of social media are inline with the existing literature as Foltean et al. [56] found a significant link between the usage of social media and company performance. Furthermore, we also regressed digital marketing along with social media marketing and marketing turbulence against the dependent variable i.e. Marketing Performance, to see the combined effect. The results received were significant in case of digital transformation and social marketing (0.000) while in case of digital transformation and marketing turbulence the results received were non-significant. (0.857). The results of market turbulence and firm performance are in-line with the findings of Sulaiman et al. [132], Ta'Amnha et al., [134]. As the impact of digital transformation and social media are significant while the market turbulence insignificantly impacts market performance. This is because SMEs with strong digital capabilities have greater resilience to external market fluctuations. This result corroborate with the result of Andotra and Gupta [13]. Hence this way the regression analysis gives us a clear indication that if a firm has digitally transformed and is using social media marketing as a marketing tool it's more likely to perform better in terms of its marketing performance. While in case of market turbulence we can say that if the market turbulence is increased the

Table 3 Results of regression analysis

	Regression Cofficients				Collinearity Statistics	
Variables	B	SE	T	P	Tolerance	VIF
Constant	1.3**	0.64	2.07	0.046		
DT	0.34**	0.17	1.10	0.025	0.04	21.90
SMM	0.41***	0.11	3.85	0.000	0.13	7.70
MT	0.422**	0.161	2.56	0.011	0.05	17.90
DT x SMM	0.09***	0.026	3.61	0.000	0.04	20.25
DT x MT	-0.09	0.05	-0.19	0.857	0.01	55.49

Regression analysis: Dependent variable: MP(avg), Adjusted R square = 0.727

Dependent Variable: MP, 95% CI, Where ***, ** represent level of significance at 1% & 5% respectively.

MP stands for marketing performance, DT stands for digital transformation, SMM stands for social marketing, MT stands for marketing turbulence

firms might perform low in terms of their marketing performance as more market turbulence means more volatility and more un-predictable situations. Table 3 summarizes the results of regression analysis.

We can see that the R square value is 0.727 which reveals that the predictor variables explained 72.7 percent variance in outcome variable i.e. independent variables cause 72.7 percent change on the dependent variable with $F(5, 264) = 140.74$, $P < 0.001$.

5 Conclusion

This study evaluates the literature on SMEs' marketing performance and digital transformation by integrating TAM with insights from SMEs operating in Rawalpindi and Islamabad regions. This study highlights how digital transformation affects the marketing performance of SMEs unlike previous studies that mainly focus on technology adoption. Additionally, the role of market turbulence and social media marketing have been studied as moderator and mediator respectively. This offers a more nuanced view on the impact of digital transformation on marketing performance. By demonstrating this linkage this study contributes to the literature related to technology adoption, digital strategy and SME competitiveness. A wide range of implications on competitiveness, consumer welfare, and public policy decision-making are being caused by changes in how businesses evaluate demand and implement new marketing methods. Digital disruption has had game-changing effects on marketing. Modern digital media's characteristics, such as its interaction and ability to provide more precise analytics, have given rise to whole new marketing options. Predicting the changing tastes and needs of customers is a significant issue for marketers, technology suppliers, investors, and government policy makers. The odds are high. There are several examples of businesses that have failed to change with the times as a result of new business models, technology, and demand fluctuations. The rapid adoption of digitization will be accelerated by the marketing industry's use of digital tools, products, and tactics, with implications for labor markets, consumer welfare, and the competitiveness of both enterprises and nations. Consumers, organizations, and governments are all projected to experience different advantages and costs as a result of the technological transformation of marketing. Digital markets have altered the globe, and traditional marketing techniques used to analyze consumer behavior have shown to be less successful. Consumer buying and purchasing behavior is evolving quickly, and a number of preferences are changing as a result. These preferences include a growing preference for experiences over material goods, the use of mobile technology, consumer co-creation of value, online shopping, and shared consumption over ownership. New models, such as the Consumer Decision Journal and Consumer Value Chain models, have been developed to better understand the nature of consumer demand. According to Moeller et al. [101], "The technology will not be the constraint for your organization. It will depend on your capacity to leverage the three drivers—decreased expenses, more client engagement, and improved asset utilization. If you can properly use digital technology to do it, you will be one of the beneficiaries of the age of digital disruption. Organizations and decision-makers must consider how the digitalization of marketing will impact customer welfare and economic competitiveness. To acquire insights on how to effectively adapt company tactics and governmental laws to function in this new digital economy, businesses and public policy makers must "follow the customer."

5.1 Managerial implications

The empirical findings of this study show that managers may leverage these uses of digital technology to capitalize on their comparative advantage over rivals. To promote digital transformation and organizational innovation, the use of digital technology calls for a flexible and dynamic architecture, centralized data processing, shared knowledge, smart activity redesign, and quick decision-making. The technological methods or architecture that managers supply should enhance how people view distributed ledgers, shared infrastructure, and information sharing and transactions. In conclusion, managers must be aware of the rapid growth of digital technology components and the ways in which they are intertwined with features relating to the relevant market and client characteristics [70]. Additionally, managers must be knowledgeable and upbeat to lead a digital transformation plan that will bring the organization

financial and market rewards. Managers should recognize five main digital transformation strategies, including new product strategy, new value-added service strategy, customized strategy, product embedded in the platform, and platform service/product strategy, and prioritize work in line with their objectives (Jin, Ma, and Ye 2020). A corporation should consider its primary value proposition when selecting a digital transformation strategy, as well as who owns the data it plans to use. Managers who are knowledgeable of the many digital strategies will be better able to decide (and change their minds) as to how to proceed with their digital transformation [42]. Therefore, we advise managers to take into account the company's position, available resources, and market dynamics when navigating the digital transformation process. This study increases managerial understanding of organizational innovation, which is crucial for firm performance, especially since a variety of marketing performance factors (including the application of information, the quality of goods and services, and workflow efficiency) should be implemented [39]. The three organizational innovation ideas knowledge management, new product/service management, and process innovation are fully implemented as part of the design of an innovative company, together with rigorous work on change management. In other words, organizational change is necessary to promote innovation. As a result, managers should emphasize on the deployment of cutting-edge management approaches or ongoing organizational structure enhancement to support innovation activities.

5.2 Limitations and future research

As this study focuses on SMEs operating in Rawalpindi and Islamabad, the findings may not be fully representative of SMEs operating other regions as the economic and technological conditions may differ. This may limit the generalizability of the results. It is also recommended to carry out studies that are longitudinal in nature to assess the long-term impact of digital transformation on SME marketing performance. Moreover, studies are also suggested which explore additional mediators and moderators, such as entrepreneurial orientation and innovation capability, to provide a more comprehensive view of the digital transformation-marketing performance relationship.

Author contributions M.A. and M.G. convinced the idea. M.A. has written the preliminary draft and collected the data. M.A. and I.A. estimated the model. M.G. and I.A. proofread the paper. I.A. has formatted the paper.

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Data availability The datasets generated during and/or analysed during the current study are available from the corresponding author on reasonable request.

Declarations

Ethics approval and consent to participate The protocol of this study was approved by the Ethics Committee of NUST Business School (NBS), National University of Sciences and Technology (NUST), Islamabad, Pakistan vide letter number D929/EC-NBS/23, dated February 08, 2022. The study was carried out in accordance with the Declaration of Helsinki.

Consent for publication Not applicable.

Informed consent The need for ethical approval was waived off by the ethical committee of NUST Business School (NBS), National University of Sciences and Technology (NUST), Islamabad, Pakistan because of nature of the study.

Competing interests The authors declare no competing interests.

Appendices

Appendix A

See Table 4.

Table 4 Reliability analysis and descriptive statistics

Indicator	Latent variable	Mean	Std. Deviation	N	Cronbach's Alpha if Item Deleted
DT1	Digital Transformation (DT)	4.24074074	0.807381954	270	0.927
DT2		4.23703704	0.893657182	270	0.925
DT3		4.22962963	0.857425391	270	0.926
DT4		4.32222222	0.842563504	270	0.925
DT5		4.07407407	0.871947183	270	0.925
DT6		3.96666667	1.131994982	270	0.923
DT7		3.84814815	1.115577557	270	0.924
DT8		3.97407407	1.167748952	270	0.924
MP1	Marketing Performance (MP)	4.00370370	0.985010891	270	0.925
MP2		4.11481481	0.989612858	270	0.924
MP3		4.00370370	0.914558614	270	0.924
MP4		4.09259259	0.995688074	270	0.924
SMM1	Social Media Marketing (SMM)	4.14814815	0.892084302	270	0.928
SMM2		4.27407407	0.928120214	270	0.927
SMM3		4.26666667	1.025329759	270	0.925
SMM4		4.15925926	1.042145078	270	0.926
MT1	Marketing Turbulence (MT)	4.03333333	0.837548201	270	0.926
MT2		3.98148148	1.039923159	270	0.925
MT3		3.98888889	1.018356915	270	0.925
MT4		4.10740741	0.982911965	270	0.925
MT5		4.05555556	0.916934173	270	0.925
MT6		4.23703704	0.885298407	270	0.925
MT7		4.21481481	0.803201634	270	0.926
MT8		4.10000000	0.994968756	270	0.924

Appendix B

See Table 5.

Table 5 Items and constructs

Items and constructs	
Digital transformation	
DT1	We are committed to use digital technologies in developing our new solutions
DT2	Our solutions have superior digital technology
DT3	New digital technology is readily accepted in our organization
DT4	We always look out for opportunities to use digital technology in our organization
DT5	We systematically scan for new technologies inside and outside the industry
DT6	Significant portions of profit are reinvested in R&D for digital tech adoption
DT7	We have a great Incentive system for R&D personnel for new patents
DT8	Regular R&D meetings are attended by all top executives
Marketing performance	Our company has performed better than competitors in last three years in terms of
MP1	Entering new markets quickly than competitors
MP2	Introducing new product/services faster than competitors
MP3	Success rate of new product/services
MP4	Market share as compared to the competitors
Social media marketing	
SMM1	Our company uses social media to share content
SMM2	Our company uses social media to create conversations with customers
SMM3	Our company uses social media to create social relationships with customers
SMM4	Our company uses social media to manage communities
Market turbulence	Our company has performed better than competitors in last three years in terms of
MT1	Our customer's preferences are constantly changing
MT2	Our set of client changes on a regular basis
MT3	Our firm experiments a high rate of change of its competitors
MT4	New competitors enter the market place on a regular basis
MT5	We can accurately predict the future characteristics of our competitive environment
MT6	We can anticipate how to satisfy our customer's future preferences
MT7	We are secure about how to presently deal with our clients to keep them in the future
MT8	We can predict the evolution of the environmental forces

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