Guest editorial: Impact of artificial intelligence on business strategy in emerging markets: a conceptual framework and future research directions

1. Introduction

With the rapid advancement of artificial intelligence (AI) technologies, businesses in emerging markets are embracing AI applications to enhance their productivity and footprints. Recent developments in machine and deep learning have revolutionized cognitive computing and natural language processing, laying the foundations for proliferating AI business applications in nations like China (Bughin *et al.*, 2017). AI is poised to reshape emerging markets; for example, finance, labor, human resource management, marketing, advertising, business strategy, supply chain management, services, retail and information systems. Consequently, savvy entrepreneurs are pondering the use of facial, image and speech recognition applications to mitigate costs and barriers, enhancing their productivity.

In emerging markets, AI provides a technological solution to the economic and *social* challenges faced by governments, firms and people at the bottom of the economic pyramid. Integrating data from multiple sources (e.g. websites, social media and traditional channels) can help firms build data management platforms, develop sound business strategies, lower barriers to doing business, create innovative business models and spur economic development (Arora and Rahman, 2017). Firms in developing countries may use innovative AI-based solutions to enhance autonomous goods and service delivery, implement production automation and develop mobile AI apps for services and credit access (Strusani and Houngbonon, 2019). AI-based technologies can create opportunities and expand markets by enhancing productivity, business process automation, financial solutions and government services. Powered by AI, emerging markets' public and private sectors can find leapfrogging solutions and work together to reduce poverty and inequality while boosting economic mobility and prosperity (Andrews *et al.*, 2019; Xie *et al.*, 2017; Zhou *et al.*, 2019).

New adoption, utilization, integration and implementation challenges have arisen in emerging markets as businesses embrace AI solutions. Conceptual studies have addressed the challenges of AI in services (Huang and Rust, 2017, 2018, 2020; Li *et al.*, 2021a, b; Prentice *et al.*, 2020; Robinson *et al.*, 2020; Van Doorn *et al.*, 2017; Wirtz *et al.*, 2018), personalization (Hermann, 2021; Kumar *et al.*, 2019), advertising (Kietzmann *et al.*, 2018; Lee and Cho, 2020), sales management (Paschen *et al.*, 2020; Singh *et al.*, 2019), industrial marketing (Li *et al.*, 2021a, b; Martínez-López and Casillas, 2013), automation in business logistics systems (Klumpp, 2018), market research (Wirth, 2018), smart warehousing readiness (Mahroof, 2019), AI platforms (Dawar and Bendle, 2018), tourism management (Cain *et al.*, 2019; Stalidis *et al.*, 2015), medical care (Ahmed *et al.*, 2020), marketing strategy (Huang and Rust, 2021) and ethics (Davenport *et al.*, 2020; Fullerton *et al.*, 2017; Nunan and Di Domenico, 2017). Nonetheless, academic studies about business-related AI in emerging markets remain scant. Institutional environments in developing countries differ vastly from those in developed countries, creating novel obstacles and legitimacy issues for AI-related business applications

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(Yang *et al.*, 2012). Hence, more theoretical and empirical studies to tackle the challenges of AI in emerging markets are needed.

2. A conceptual model of AI-driven business strategy in emerging markets

Following the logic grounding the conceptual frameworks in Yang and Su (2013, 2014), we created a model that depicts AI-driven business strategy development in emerging markets. As shown in Figure 1, our model highlights the critical role of institutional environments in shaping AI-driven business strategies and their impacts on the efficiency and legitimacy of AI-driven business.

We posit that emerging markets' cultural, technological, social, economic and religious forces shape AI-related institutions (Yang and Su, 2013; Zhou *et al.*, 2015). Businesses concerned about the legal, ethical and social issues created by AI applications must consider these forces to understand AI's effect on the welfare of workers and consumers at the economic pyramid's bottom (Xie *et al.*, 2017). For example, all businesses, especially MNCs, should attend to economic inequality and the negative externalities of jobs returning from emerging markets to mature markets due to AI-induced productivity gains. We contend that businesses should ponder whether opaque AI applications will erode human self-determination (Zhou *et al.*, 2012).

Regarding institutional influence on AI-driven business strategy, the three institutional pillars posited by Scott (2008) – regulative, normative and cultural-cognitive – provide a useful framework. *Regulative institutions* are the laws and regulations set by governments. Central and local governments are vital to delineating legal foundations, establishing industrial policies, providing capital and creating a roadmap to harness AI-related business opportunities in emerging markets. *Normative institutions* establish industrial associations' norms and standards for data access, data privacy, security and public trust. *Cultural-cognitive institutions* refer to AI-related business behavior; for example, businesspeople and consumers may distrust AI-related technologies and AI-made decisions.

Scott's institutions and stakeholders, such as governments, communities, non-government organizations (NGOs) and investors, are mutually influential. These dynamic influences can inform managers' interpretations and evaluations of Scott's institutions on AI-based business strategies. Specifically, do institutions impose constraints on or function as

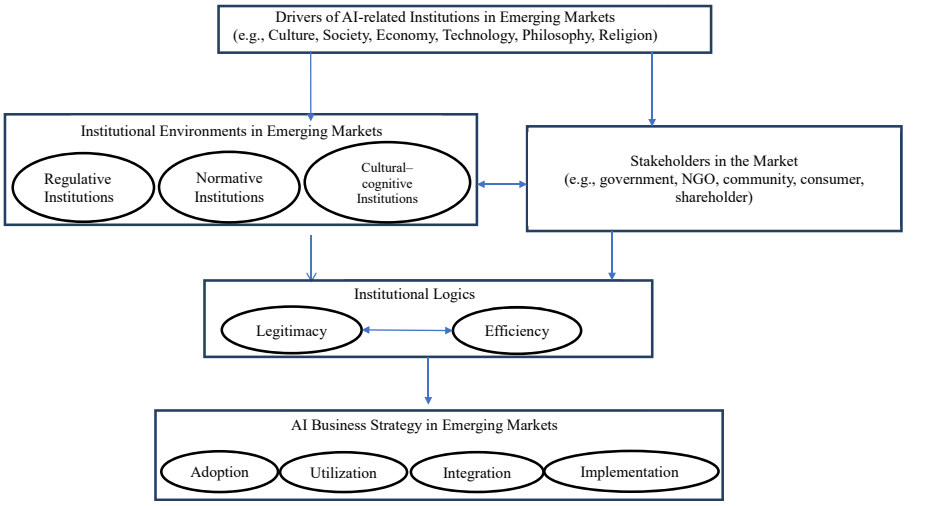

Figure 1.
Conceptual model for AI-Driven business strategy in emerging markets

facilitators for gaining a competitive business advantage? Managers and consumers often question the efficiency and legitimacy of intelligent agents. AI applications in business enhance efficiency, convenience and cost-effectiveness while raising concerns such as algorithmic social and data bias, data privacy and data protection. Institutional logics often pressure businesses into finding creative solutions. Hence, a novel governance mechanism is desirable to jointly address legitimacy and efficiency issues (Yang *et al.*, 2012). Managers can develop creative adoption, utilization, integration and implementation strategies in emerging markets; for example, the contingent role of chatbot sales–service ambidexterity may resolve the personalization–privacy paradox (Fan *et al.*, 2022).

3. Future research directions

A goal of this thematic issue is to encourage new AI-related theories and conceptual frameworks, focusing on emerging markets. A scientifically sound mindset should prompt a reassessment of traditional theoretical assumptions. For example, the fundamental concept of microeconomic theory – rationality – should be redefined in an AI context to help make and augment rational decision-making (Parkes and Wellman, 2015). *Machina economicus* reflects AI's profound effects on economic reasoning. Similarly, new conceptual frameworks for AI in business should suggest fruitful research streams (Hartmann *et al.*, 2018; Kumar *et al.*, 2016; Yadav and Pavlou, 2014). Our posited model intimates several promising theoretical and methodological paths to enhance understanding of AI-driven business strategy in emerging markets.

Due to institutional distances, AI-related business strategies in emerging markets and developed countries differ. Hence, researchers should question AI-related institutions' cultural, socioeconomic and technological forces in emerging nations. For example, how will AI change the traditional export-led path toward economic growth? Similarly, how should sustainability-focused businesses ensure their AI-driven practices respect fundamental human values such as dignity, freedom, equality and justice while complying with various stakeholders' preferences?

The empirical studies summarized in this issue indicate ways businesses can leverage AI's potential in emerging markets. To realize appropriate AI-derived values, business leaders should build and nurture adaptive organizations with an open and collaborative culture and teach workers skills that ensure a smooth intellectual transition (International Finance Corporation, 2020). Future empirical studies can reveal AI's disruptive potential and the challenges of adopting, utilizing, integrating and applying AI to businesses in emerging markets. Because data access is now a competitive advantage, scholars contend that AI will widen technological and knowledge gaps between emerging and mature nations (Mayer-Schonberger and Cukier, 2013). To prevent this gap from further retarding economic development in emerging markets, businesses could use automated analysis of text, images, audio and video to help the poor and unprivileged (Kopalle *et al.*, in press).

Pagani and Champion (2021) proposed a way to check safety, accountability and societal well-being per European Commission (2019) requirements for human-centric AI systems. They posit that programmers' diverse backgrounds may preclude algorithmic biases in human–machine interaction design. Furthermore, businesses should adapt AI systems to local contexts; for example, marketers could customize popular AI platforms (e.g. Apple Siri, Microsoft Cortana, Amazon Alexa and Google Assistant) or create versions to reshape marketing strategies such as branding, advertising and promotion. Similarly, businesses in emerging markets could leverage AI systems to manage customer experience and engagement by enhancing various service aspects (e.g. service design, co-creation, real-time customer support, service recovery, satisfaction, loyalty, complaints and customer churn).

Finally, business scholars should address critical methodological issues. They could apply AI-powered tools – such as facial recognition, speech recognition system, image recognition, machine learning and natural language processing – to relevant research on emerging markets. They should use innovative data analysis approaches to augment often-insufficient purposive and rule-based data analyses. To harness AI-related opportunities in emerging markets, scholars should attend to data generated via new forms of interaction (e.g. virtual reality, augmented reality, metaverse and chatbot) among consumers, businesses and NGOs (Hoffman *et al.*, 2022). Furthermore, they should develop emerging market-compatible measures of AI-related constructs.

4. Articles in the special issue

This special issue is devoted to advancing knowledge of AI-driven business strategies in emerging markets. We are delighted to include 12 articles on adopting, utilizing, integrating and implementing AI in various industries. We now summarize each article per its main research questions (see Table 1).

In "The impact of artificial intelligence (AI) finance on financing constraints of non-SOE firms in emerging markets," Shao *et al.* (2022) discuss AI finance's influence on the financial constraints of non-SOE firms in China. The authors report that AI financing can alleviate these constraints, especially for smaller and more innovative businesses in developing areas. This finding has practical policy implications because non-SOE businesses are more constrained in obtaining external financing than their SOE peers.

"Artificial intelligence in peer-to-peer lending in India: A cross-case analysis," by Anil and Misra (2022), presents research at the cusp of peer-to-peer (P2P) markets and AI in India, one of the fastest-growing markets for fintech. Six breakout segments comprise Indian fintech, with P2P as an important subsegment of "credit." The article reveals (1) AI's evolving role in Indian P2P lending markets; (2) how a disruptive technology like AI is revolutionizing P2P platforms with predictive intelligence for making credit decisions, thereby acting as a catalyst for them and (3) how Indian P2P lenders using automated processes and manual underwriting will eventually transition to totally automated processes.

The article by Lai and Luo (2022), entitled "How does intelligent technology investment affect employment compensation and firm value in Chinese financial institutions?," reports on the nexus between intelligent technology investment and employee compensation and its impact on firm value. They found a persistent inhibitory effect on this nexus in emerging markets' financial institutions and show increases in intelligent investment have a positive two-year lagged effect on firm value. Their findings may help financial firms better understand their need to address the subsequent growth-related costs of intelligent technology input.

In "How do AI applications in service marketing differ from human employee to influence consumer behaviors?," Jiang *et al.* (2022) address this question by examining the moderating role of service provider type (humanoid robot vs human employee) on consumer reactions. They found consumers served by a humanoid robot are more easily convinced about the utilitarian value of functional but not culturally mixed products. In contrast, consumers served by a human employee prefer to be persuaded by cultural connotations and culturally mixed rather than functional products. Furthermore, this effect is driven by perceived usefulness (vs perceived enjoyment) when served by a humanoid robot (vs human employee).

The article by Fan *et al.* (2022), entitled "How can marketers design an AI chatbot creating profits while catering to various demands from customers?," addresses this question by examining the contingent role that chatbot sales–service ambidexterity play in adapting to customers' personalization–privacy paradox. In taking an organizational ambidexterity perspective to explore AI chatbot efficacy, they found the inherently negative (positive)

Authors/ Study	Data/Approach	Key findings	Contributions to the SI
Shao *et al.* (2022)	Qualitative study with a sample of non-SOE-listed companies in China from 2011 to 2018	The development of AI finance can alleviate financing constraints for non-SOE firms. This effect is more pronounced for smaller firms, more innovative firms and firms in developing areas	Emerging market countries can ease financing constraints on non-SOE firms by promoting AI finance development
Lai and Luo (2022)	Qualitative study with a sample of 86 listed financial institutions in China from 2010 to 2019	A persistent inhibitory effect exists on the nexus of intelligent technology investment and employee compensation in financial institutions. The increase in intelligent investment has a positive two-year lagged effect on firm value	Help practitioners in emerging countries better understand that firms need to reasonably deal with the subsequent cost of growth caused by intelligent technology input
Fan *et al.* (2022)	Online survey data collected from 507 AI chatbot users	As the benefits of personalization decreased and the risk to privacy increased, the inherently negative (positive) effects of imbalanced (combined) chatbots' sales–service ambidexterity had an increasing (decreasing) influence on customer experience	Enrich the literature on frontline ambidexterity and extend it to human-machine interaction
Jiang *et al.* (2021)	Experimental data collected from 203 undergraduate students (Study 1) and 217 frontline staff members (Study 2)	When served by a humanoid service robot (vs. human employee), consumers exhibit more positive attitudes and purchase intentions toward functionally (vs culturally) mixed products	Offer insights for managers to develop service marketing for mixed products
Hamdan *et al.* (2021)	Used a machine learning method to collect data from 167 SMEs in Palestine's largest industrial sectors	Perceived benefit and ease of use are the most influential determinants of blockchain adoption	Deliver a decision support system for business leaders to estimate the potential for blockchain adoption
Dong *et al.* (2021)	A theoretical framework is developed through grounded theory and case analysis	Collaboration value is a building block for intelligent product ecosystems. These ecosystems are upgraded by coordinating products, platforms and networks	Provide a framework for enterprises to build an intelligent product ecosystem
Yao *et al.* (2022)	Experimental data collected from 93 consumers (Experiment 1) and 196 participants (Experiment 2)	Higher social class participants were more willing than lower social class participants to choose robot services in credence-based service settings. Risk aversion mediated the interaction effect	Help multinational enterprises (MNEs) develop strategies for scaling up robot services

(*continued*)

Table 1.
Summary of special issue articles

Authors/ Study	Data/Approach	Key findings	Contributions to the SI
Sharma *et al.* (2021)	Used a modified total interpretive structural modeling (m-TISM) approach	Identifies ten key factors essential for analyzing AI's impact on a firm's competitiveness	Detailed analysis of the ten factors can help tourism firm managers enhance competitiveness
Anil and Misra (2022)	Cross-case study based on semi-structured interviews with 6 NBFC-P2P founders and 12 fintech and P2P industry experts	Showcases AI's evolving role in Indian peer-to-peer lending (P2P) markets. Findings indicate that AI has reached a tipping point in India	Illustrate P2Ps still stuck to manual underwriting and show the merit in AI-driven processes
Sui and Mo (2022)	Experimental data collected from 396 participants in China (study 1) and 300 participants in the UK (study 2)	Moral standards declined for low-SES but not high-SES persons when using smart devices (vs non-smart devices)	In emerging markets, managers and marketers should be aware of this morality erosion and use preventive measures in advance
Gao *et al.* (2022)	Survey data collected from 209 survey participants from August to December 2020	Two dimensions of AI technology stimuli positively affect smart customer experience; the moderating effects of contrasting dimensions of technology readiness are significantly different; smart customer experience has a positive effect on consumers' word-of-mouth intentions	Help enterprises better understand customer psychology and AI technology to promote a positive customer experience and improve consumers' word-of-mouth intentions, especially in the emerging markets
Wang *et al.* (2022)	Interview data collected from 66 SMEs across 20 industries in central China	SMEs in central China are enthusiastic about intelligent transformation while facing internal and external pressures. They have been forced to take a step-by-step strategy based on actual needs instead of long-term overall system design, constrained by limited resources	Firms should attend to executives' role in promoting intelligent transformation and fully use policy support to access additional resources

Table 1.

effects of imbalanced (combined) chatbots' sales–service ambidexterity had an increasing (decreasing) influence on customer experience. Furthermore, customer experience fully mediated the association of chatbots' sales–service ambidexterity with customer patronage.

In "Analysing the impact of artificial intelligence on the competitiveness of tourism firms: A modified total interpretive structural modeling (m-TISM) approach," Sharma *et al.* (2022) focus on tourism firms' use of AI to boost their competitiveness. Researchers and practitioners are optimistic that AI can help tourism firms profitably deliver services and products at competitive prices while enhancing customers' satisfaction. AI-based systems – such as chatbots and virtual assistants – are changing the tourism and hospitality industry. Using a modified total interpretive structural modeling approach, Sharma *et al.* (2022) explored the factors influencing tourism firms' overall performance. Hierarchical interrelationships among these factors are crucial to realizing AI's potential. The model also answers the "why" and "how" of these relationships. Adopting AI could help tourism and hospitality firms mitigate risks and challenges while sustaining competitiveness.

In "The impact of artificial intelligence technology stimuli on smart customer experience and the moderating effect of technology readiness," Gao *et al.* (2022) construct an impact mechanism model for AI technology stimuli on word-of-mouth intentions. They found that (1) two dimensions of AI technology stimuli (i.e. passion and usability) positively affect smart customer experience, (2) different dimensions of technology readiness (i.e. optimism and discomfort) have different moderating effects on the relationship between AI technology stimuli and smart customer experience and (3) smart customer experience positively affects word-of-mouth intentions. These results can help businesses better understand customers' psyches and use AI technology to create positive customer experiences that enhance word-of-mouth in emerging markets.

Rising labor costs and a robotic technology boom have grown the role of robots in China's service sector. Considering this trend, it is imperative that marketers better understand the factors that affect consumers' attitudes toward AI robots, especially in emerging markets. In "The impact of social class and service type on preference for AI service robots," Yao *et al.* (2022) examine how social class and service type jointly affect consumers' willingness to choose AI service robots. In essence, their research suggests that companies should adopt different strategies when deploying AI service robots in different markets. In particular, current AI robots are most appropriate for credence-based service markets with high upward social mobility.

In "What is the impact of artificial intelligence on people's morality in emerging markets?," Sui and Zhou (2022) examine the moderating effect of socioeconomic status (SES) on smart device usage and moral standards in the UK and China. They found that using smart devices (vs non-smart devices) lowers moral standards for low-SES persons but not high-SES persons. Although smart device usage is the norm in developed markets, such usage is rising among employees in emerging markets. To avoid moral degradation and deviant behaviors in the workplace, managers can train their employees before adopting emerging technologies.

Smart product ecology can improve the collaborative value creation of physical products by triggering major organizational strategic and structural changes. In "Product intellectualization ecosystem: A framework through grounded theory and case analysis," Dong *et al.* (2022) develop a conceptual framework for a product intellectualization ecosystem by studying two companies: Haier Group Company (Haier) and Xiaomi Corporation (Xiaomi). After identifying a three-stage process that entails smart product unit, smart product system and smart product ecology, they establish a coordination mechanism and three coordination modes: product coordination, platform coordination and network coordination. Their posited model delineates the collaborative values achievable via different coordination modes across the stages.

In "What are determining factors of blockchain technology adoption in an emerging market?," Hamdan *et al.* (2022) respond to this question by using a machine learning method to predict blockchain adoption by Palestinian firms. They relied on a Bayesian network examination to develop an extrapolative decision support system, highlighting the determinants – perceived benefit and ease of use – -that most influence managers' predictions for their company's technology adoptions. The findings provide insight into the literature by showing reduced technological complexity is unrelated to perceived benefit, perhaps because Palestinian SMEs are eager to adopt a new technology despite a perceived difficulty and complexity of use.

Finally, "How to survive in the age of artificial intelligence? Exploring the intelligent transformation of SMEs in Central China," by Wang *et al.* (2022), explores how AI transformed these SMEs. After interviews across 20 industries, they found that SMEs in central China are enthusiastic about intelligent transformation despite internal and external pressures. Constrained by limited resources, these SMEs were forced into a step-by-step strategy based on immediate needs rather than overall system design. Although they should

attend to executives' roles in promoting intelligent transformation, overemphasizing social responsibility will hinder SMEs' intelligent transformation. These findings can help businesses in labor-intensive and resource-deficient emerging markets.

5. Conclusion

AI's rapid development provides an opportunity for innovative research in emerging markets. To refine and extend existing theories and build new ones, we propose a conceptual model of AI-driven business strategy to depict how businesses should adopt, utilize, integrate and implement AI to gain a competitive advantage. By identifying the main forces, businesses can better understand the regulatory, normative and cultural-cognitive institutions that promote or constrain AI-driven businesses. Stressing the confluence of legitimacy and efficiency of AI-driven business, our model suggests several promising research streams.

The essential issue is how businesses can better leverage AI. Advances in institutional theory can help businesses interpret, manipulate, revise and elaborate on business marketing institutions. We hope this special issue will encourage business scholars to work and think innovatively about institutional theory in the context of ever-expanding business markets.

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