

Factors Affecting Social Commerce Adoption and Innovation Performance Among MSMEs in Saudi Arabia: The Moderating Role of Organizational Agility

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Abstract:

This study examines the factors influencing social commerce (SC) adoption and its impact on innovation performance among Micro, Small, and Medium Enterprises (MSMEs) in Saudi Arabia, with organizational agility as a moderating variable. Drawing on the Technology-Organization-Environment (TOE) framework and dynamic capability theory, the study identifies technological factors, organizational factors, and environmental factors as key drivers of SC adoption. Data were collected from 226 MSMEs using a structured online questionnaire and analysed using Partial Least Squares Structural Equation Modelling (PLS-SEM). The findings reveal that all three factor categories significantly influence SC adoption, which, in turn, positively impacts innovation performance. Organizational agility strengthens this relationship, highlighting its critical role in maximizing the benefits of SC adoption. The study contributes to the literature by extending theoretical frameworks to the context of MSMEs in emerging economies and offers practical insights for policymakers and business leaders aiming to enhance digital transformation and innovation.

Keywords : S-commerce, MSMEs, innovation performance, organizational agility



I- Introduction:

Due to rapid digital technology progress, the current business climate has changed the operational methods of firms, especially Micro Small and Medium Enterprises (MSMEs). (S-commerce (SC) combines social media and e-commerce to help businesses build trust, engage customers, and boost sales. SC can help MSMEs, especially in emerging economies like Saudi Arabia, overcome resource constraints, expand market access, and innovate (Al-Omoush & Shuhaiber, 2024). SC deployment is complicated and impacted by many technological, organizational, and environmental issues, despite its potential benefits. Understanding these traits helps MSMEs use SC for performance and innovation (Al-Kfairy et al., 2024; H. G. Alotaibi & Aloud, 2023).

Saudi Arabia provides a unique setting for studying SC adoption. Vision 2030 is driving an economic transformation in the Middle East's largest economy. Entrepreneurship and small businesses are key to sustainable growth under this national strategy, which promotes economic diversity. The Kingdom's digital infrastructure and widespread internet and social media use have spurred digital transformation (Monsha'at, 2022). Instagram, Snapchat, and TikTok are popular business-to-consumer platforms, making SC a powerful tool for businesses to engage with customers (X. Wang, 2024). Despite these advances, Saudi MSMEs face digital literacy, financial constraints, and data security and privacy concerns that prevent SC adoption (S. Alotaibi & Aljaafari, 2024). SC adoption by MSMEs requires overcoming these barriers and identifying acceptability criteria.

SC usage boosts innovation. Innovation performance is an organization's ability to meet market demands with new products, services, or processes, preserving competitiveness (Teece et al., 2016). By engaging customers in real time, developing products collectively, and using data analytics to gather market data, SC may spur innovation. SC platforms also allow MSMEs to collaborate and use social media for ideation and problem-solving, boosting process and product innovation (Nick Hajli, 2020). SC use does not guarantee innovative success. The outcome depends on internal organizational factors, notably the company's adaptability to technology and readiness to invest in its knowledge and infrastructure (H. G. Alotaibi & Aloud, 2023; Andijani & Kang, 2022).

Internal organizational agility affects SC adoption and innovation performance. SC requires organizational agility, the capacity to quickly adapt to market changes and seize new opportunities (Doz & Kosonen, 2010). Agility helps MSMEs adapt quickly to customer feedback, change marketing strategies, and improve product designs. MSMEs must adapt to be competitive and innovate in the fast-changing, digital Saudi market. High-agile companies can use social media trends, improve supply chains for fast delivery, and provide personalized services to satisfy customers (Kosasi & Yuliani, 2017).

The importance of MSMEs in economic growth and the expanding use of digital tools for business make this topic important. MSMEs are vital to Saudi Arabia's economy and employment, yet they often lack the resources to adopt and benefit from digital technologies. This paper examines SC adoption variables to help MSMEs overcome obstacles and integrate SC into their business models. Moreover, focusing on innovative performance highlights the organizational and economic effects of SC adoption. In the

global economy, innovation drives competitive advantage and sustainability; thus, MSMEs must grasp how digital platforms may boost their innovation skills.

Filling gaps in the literature makes this research academically relevant. The setting of SC, notably in Saudi Arabia, has received less attention in terms of adopting SC by MSMEs (H. G. Alotaibi & Aloud, 2023; S. Alotaibi & Aljaafari, 2024). Organizational agility as a moderating component in SC uptake and innovation success is understudied. This study synthesizes the Technology-Organization-Environment (TOE) framework with dynamic capacity theory to explain SC adoption and innovation performance.

This research offers practical guidance for MSME owners, governments, and stakeholders. Saudi Arabian governments could use the findings to develop digital literacy and financial incentives to remove barriers of SC adoption. Therefore, the main objective of this study is to examine how the organizational, technological, and environmental factors can affect the adoption of SC by MSMEs. The study also examines the moderating role of organizational agility between SC adoption and innovation performance .

This paper has the following sections. Section 2 reviews SC adoption, innovation performance, and organizational agility literature and develops the conceptual framework and hypotheses. Section 3 describes the research procedure, including data collection, variable measurement, and analysis. Section 4 discusses empirical findings and analysis. Section 5 discusses the findings' theoretical and practical implications. Section 6 summarizes key findings, limitations, and suggests the direction for future research.

2. Literature review

2.1. Theoretical Framework

This study examines SC adoption and innovation performance using the Technology-Organization-Environment (TOE) Framework (Tornatzky & Fleischer, 1990) and Dynamic Capability Theory (Teece et al., 2016). The TOE framework categorizes technology adoption aspects as technological, organisational, and environmental. Technological factors include digital infrastructure and compatibility. Digital infrastructure includes reliable internet and technological resources for SC. It reduces adoption barriers and helps MSMEs optimize operations. Compatibility assesses how well SC integrates with corporate processes. Companies are more likely to use technologies that seamlessly connect with their processes and procedures to decrease disruption and boost efficiency (Venkatesh et al., 2012).

The organizational TOE paradigm stresses internal capabilities and resources that impact technology adoption (Boonpadung, 2020). Digital transformation requires management assistance and support to coordinate strategy, provide resources, and engage employees (Koc et al., 2022). Proactive leadership encourages innovation and decreases change resistance. For SC to succeed, personnel must have digital literacy or computer competency. A digitally savvy workforce can help companies use SC and overcome its challenges (S. Abed, 2018).

The environment highlights external effects and incentives on corporate decision-making. Competition drives SC adoption by forcing companies to innovate to stay competitive (Bhardwaj, 2020). In Saudi Arabia, the digital revolution is rapidly changing consumer behaviour, increasing competition. MSMEs need government support, including

financial incentives, training, and regulations, to implement SC. The Saudi government has taken various steps to promote digital entrepreneurship and increase small businesses' technological readiness under Vision 2030 (Monsha'at, 2022).

The TOE framework explains technology adoption but not how companies employ it to gain a competitive edge. Dynamic capability theory (Teece et al., 2016) tackles this gap by emphasizing organizational agility in adjusting to environmental changes and leveraging technology. A firm's dynamic skills include its ability to discover market opportunities, efficiently allocate resources, and rearrange operations to stay competitive. In SC, organizational agility allows MSMEs to change strategy, improve operations, and quickly respond to consumer needs and market changes (Kosasi & Yuliani, 2017).

Organizational agility is key to maximizing SC benefits. Agile companies may use SC systems to gather real-time customer feedback, improve product designs, and adapt to shifting tastes (Doz & Kosonen, 2010). This flexibility boosts innovation performance, which is an organization's ability to produce new products, services, and processes to meet market needs. Agility helps MSMEs stay competitive in dynamic markets like Saudi Arabia by quickly addressing issues and grabbing opportunities (Doz & Kosonen, 2010).

The TOE framework and dynamic capability theory provide a good foundation for understanding SC adoption and innovation performance. These theories provide a comprehensive framework for understanding how internal and external variables affect digital transformation, particularly for MSMEs. The theories lay the groundwork for studying how technological, organizational, and environmental factors affect SC adoption and how organizational agility moderates its impact on innovation. The unique combination of internal and external dynamics affecting MSMEs in Saudi Arabia makes this theoretical paradigm relevant. SC adoption can benefit from the government efforts and shifting consumer attitudes to digitalization. However, poor digital literacy and budget constraints necessitate a thorough understanding of technological, organizational, and environmental aspects that affect adoption. Analysing these relationships improves the discussion on digital transformation and innovation in emerging economies.

2.2. SC Adoption

The digital economy relies on SC, which combines social media with e-commerce to boost customer involvement, trust, and purchases. Unlike traditional e-commerce, SC emphasizes social aspects, including user ratings, social endorsements, sharing, and direct customer participation (Nick Hajli, 2020). This connection turns Instagram, TikTok, and Facebook into active markets, allowing firms to connect with and engage their target audience. SC may help firms, especially MSMEs, expand their markets, cut costs, and innovate. SC systems enable firms to co-create value, learn customer preferences, and customize items. SC collaboration builds trust and brand loyalty, which is crucial for customer retention and growth (Atcharyakarn & Zhang, 2021).

Despite its benefits, SC installation is difficult. Digital infrastructure, system compatibility, digital literacy, and organisational readiness affect adoption (Tornatzky & Fleischer, 1990; Venkatesh et al., 2012). SC may be difficult for businesses in locations with

poor digital infrastructure or internet access. Without skilled workers or administrative support, SC may be difficult to deploy. Due to its socio-economic characteristics and Vision 2030 digital transformation, Saudi Arabia presents a unique SC adoption scenario. The Kingdom has one of the highest social media adoption rates in the world, with Instagram, Snapchat, and TikTok dominating (Monsha'at, 2022). Businesses are using these channels to reach tech-savvy consumers, especially younger ones who prefer online shopping and social media.

MSMEs make up over 99% of Saudi Arabian businesses and contribute 20% of GDP (Alhamami et al., 2024). However, their limited resources and capacities prevent these MSMEs from adopting new technologies. Understanding SC adoption drivers can help governments and entrepreneurs overcome these challenges, allowing MSMEs to benefit from digital transformation. This is especially important in Saudi Arabia, where Vision 2030 actively promotes digital business.

2.3. Micro, Small, and Medium Businesses

MSMEs boost global growth, innovation, and employment. About 90% of enterprises globally are MSMEs, which contribute considerably to GDP and employ the majority of the workers (Kumar & Ayedee, 2021). MSMEs boost emerging nations' economic diversification and growth. Their creativity and market responsiveness make them vital to a competitive and resilient economy. Using their agility and tight client contacts, MSMEs often pioneer innovative concepts (Kadaba et al., 2023). When large companies encounter bureaucratic impediments and long decision-making, innovation is key. In the context of MSMEs, budgetary restrictions, infrastructure difficulties, and technical ineptitude hinder the growth of these enterprises. Limited funds are an issue. MSMEs have less access to financial markets than large companies and rely on self-financing or bank loans with strict terms. Financial instability may hinder technological investment, expansion, and innovation (Rodríguez Gutiérrez et al., 2022; Shamsudheen et al., 2020).

Saudi Arabia's Vision 2030 economic diversification policy relies on MSMEs to lessen oil dependency and develop a knowledge-based economy. MSMEs account up 99% of registered enterprises in the Kingdom, producing jobs and supporting entrepreneurship (Monsha'at, 2022). MSMEs contribute considerably to Saudi Arabia's GDP, although their contribution is small compared to other sophisticated and emerging nations, indicating their difficulties expanding operations and embracing new technology. The government has helped MSMEs because of their role in economic diversification. Monsha'at, the SME General Authority, provides initiatives to boost MSMEs' innovation, digital skills, and financial access. Financial incentives like government loans and grants ease capital availability. The Fintech Saudi program promotes MSMEs to use digital technologies like SC to increase productivity and customer engagement.

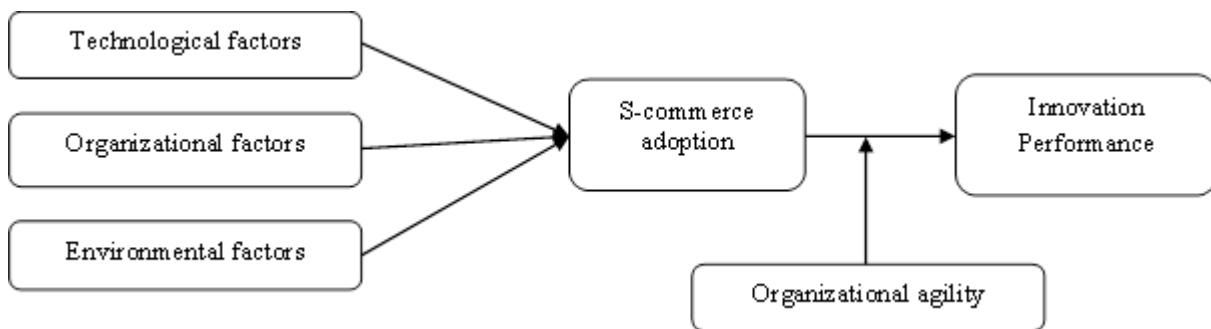
Despite these initiatives, Saudi MSMEs confront major development and competitiveness problems. Limited new technology access, weak digital infrastructure, and staff technical inexperience persist. Social barriers, including change aversion and inadequate digital literacy, may hinder SC adoption. Overcoming these difficulties

empowers MSMEs and boosts their Saudi economic contribution. To overcome outdated hurdles and compete worldwide, MSMEs must digitize, especially through SC. SC allows MSMEs to engage instantaneously, reach more customers, and utilize data analytics to make decisions. Digital solutions may help MSMEs meet Vision 2030 by optimizing operations, saving money, and innovating (Aljaafari, 2020).

2.4. Conceptual Framework

This study uses the TOE framework and dynamic capability theory to examine predictors of SC adoption and outcomes. Technological factors (digital infrastructure and compatibility), organizational factors (management support and digital literacy), and environmental factors (market competitiveness and government support) are proposed to impact SC adoption. SC adoption is proposed to affect innovation performance. Organizational agility is proposed to moderate the impact of SC adoption on innovation performance.

Figure 1: Conceptual Framework



Source: Self-developed

2.4.1. Technological Factors and SC Adoption

Technological factors are related to the digital infrastructure and readiness to use the technology, and the degree to which the existing technology is compatible with SC (Busalim et al., 2019). The use of SC requires knowledgeable staff who can navigate social media and conduct marketing campaigns, as well as manage the social connection and engagement with customers (Chen et al., 2023). Internet connectivity, digital tools, and platforms that enable user participation and system integration are digital infrastructure. Digital infrastructure and interoperability help SC adoption. Digital infrastructure ensures consistent online interaction by providing technical resources and connectivity (Al-Mutawa & Saeed Al Mubarak, 2024). The Saudi Arabian government's Vision 2030 investment in digital infrastructure has improved technical preparation, making digital solutions more accessible to MSMEs. Compatibility also indicates how well SC fits into an organization's technological frameworks and operational methods, reducing resistance to adoption and easing integration (Lim et al., 2020). Compatible SC systems with corporate procedures reduce complexity and resistance, encouraging adoption. Several previous studies indicated that technological factors have a positive effect on new technology adoption. This is also in line with the TOE (S. S. Abed, 2020; Abu Bakar et al., 2019; Ahmad et al., 2019).

Hypothesis 1: Technological factors affect SC adoption by MSMEs in Saudi Arabia.

2.4.2. Organizational Factor and SC Adoption

Organizational factors are related to the support of the management as well as the digital literacy at the enterprise. Internal organizational resources and capacities impact SC adoption. Leadership support for digital transformation includes resource allocation and SC strategy (Jones & Wynn, 2021). Management support ensures resource allocation, plan alignment, and staff SC motivation. Proactive management reduces installation and operating difficulties (P. Wang & Huang, 2022). Employee digital literacy ensures that firms have the technology to benefit from SC, eliminating operational and implementation issues (Kayali & Alaaraj, 2020). Management support and digital competency impact a company's SC readiness. Staff digital literacy reduces operational inefficiencies and boosts user confidence on SC platforms. Technological factors were found essential in supporting SC and social media adoption by the enterprise (Abu Bakar et al., 2019; Ahmad et al., 2019; AlSharji et al., 2018). Thus, the following is proposed:

H2: Organizational factors affect SC adoption by MSMEs.

2.4.3. Environment affects SC adoption

Environmental factors affect adoption decisions through barriers and enablers. Competition forces enterprises to adopt innovative strategies like SC (Ahani et al., 2017). Companies in competitive environments are under pressure to innovate and improve operations. Policy incentives, financial subsidies, and digital transformation efforts like Saudi Arabia's Vision 2030 encourage MSMEs to adopt and use digital technologies (Al-Tit et al., 2020). Market competition and government support strongly affect adoption decisions (Aljaafari, 2020; Sheikh et al., 2017). Market competition forces companies to utilize new solutions like SC to stay ahead. SC is more likely to improve customer engagement and operations in competitive markets (Albelaihi et al., 2019). Government incentives, regulatory simplicity, and training reduce adoption barriers and encourage MSMEs to employ digital technology. Prior literature found that environmental factors affected positively the SC adoption (S. S. Abed, 2020; Abu Bakar et al., 2019; Ahmad et al., 2019; AlSharji et al., 2018; Effendi et al., 2020). Therefore, the following is hypothesized:

H3: Environmental factors encourage Saudi MSMEs to adopt SC.

2.4.4. SC Adoption and Innovation Performance

SC adoption is a key intermediate variable that shows how often organizations utilize social media for e-commerce (Almahameed & Obidat, 2022). Through consumer engagement, cooperation, and trust, SC adoption helps firms explore new markets, streamline operations, and deepen customer relationships, enabling innovative performance (Bhardwaj, 2020). SC allows enterprises to communicate with customers in real time, collect feedback, and collaborate on products and services, fostering innovation. These abilities boost product and process innovation, helping companies meet market expectations (N. Hajli et al., 2017). SC platforms' interactivity encourages collaboration and provides insights that improve decision-making and efficiency. Prior literature found that the usage

of e-commerce improved the innovation performance (Koh & Liu, 2024). The effect of e-commerce adoption on SMEs' performance was found also positive (Abebe, 2014).

H4: SC improves innovation performance in Saudi MSMEs.

2.4.5 Organizational Agility as a Moderator

Enterprise innovation performance is its ability to develop and implement new products, processes, and services to suit customer needs and boost competitiveness (Yikilmaz & Cekmecelioglu, 2023). SC should boost innovation by providing real-time insights, encouraging collaboration, and streamlining processes (Homayoun et al., 2024). Organizational agility, the ability to quickly adjust to market changes and seize new possibilities, moderates the SC adoption-innovation performance relationship (Shaikh, 2025). Agile organizations may utilize SC to change strategy, optimize resources, and quickly iterate on innovations (Denning, 2017). Enterprise agility helps SC adoption and innovation success by helping companies to adapt to market changes and seize opportunities (Kirchmer, 2022). Agile organizations may quickly respond to customer input, update strategy using real-time data, and iterate on innovations to capitalize on SC adoption. Organizational agility was found to moderate the effect of several relationships. For instance, organizational agility moderated the effect of the knowledge management process on performance (Shahzad et al., 2020) and it also moderated the effect of task technology fit and employee performance (Chung et al., 2015). Therefore, in this study, the effect of SC on innovation performance is proposed to be moderated by organizational agility.

H5: Organizational agility moderates the effect of SC on innovation performance.

3. Research Methodology

This quantitative study examined the factors of SC adoption and its impact on innovation performance in Saudi Arabian MSMEs. Quantitative research allows statistical analysis of variables and relationships, ensuring impartiality, reliability, and generalizability. Since it allows rigorous hypothesis testing in a systematic framework, the methodology is ideal for studying the organizational agility's moderating effect. This research targets all Saudi MSMEs. These companies drive the nation's economic growth and support Vision 2030 goals. Monsha'at, the General Authority for Small and Medium Enterprises, defines MSMEs in Saudi Arabia by workforce numbers, annual income, and total assets (Monsha'at, 2022).

This study uses purposive sampling. Purposive sampling selects people with relevant knowledge and experience for the research. This method addresses MSMEs' decision-makers, managers, and owners, who have adequate knowledge of their enterprises' digital strategies and SC adoption. Therefore, the usage of purposive sampling ensures high-quality, informed data from digital technology adopters and deployers. Therefore, only MSMEs that are using or intend to use SC are included in this study. The data of this study were collected using a questionnaire. the questionnaire was adopted from prior literature, such as organizational, technological, and environmental factors were adopted from Tornatzky and Fleischer (1990). SC adoption was adopted from (N. Hajli et al., 2017).

Organizational agility was adopted from (Chung et al., 2015; Shahzad et al., 2020). Innovation performance was adopted from (Inauen & Schenker- Wicki, 2011).

The questionnaire was translated into Arabic and validated by three experts with a PhD degree in technology adoption. Some corrections regarding numbering and clarity of the translation were addressed. A pilot study was conducted to assess the reliability of the variables. The Cronbach's Alpha of all the variables recorded values above 0.70, implying that the measurements are reliable. The data was collected by sending direct messages via social media to the pages of MSMEs or by sending emails. A question was placed at the beginning to identify the users of SC or the potential users, and they were asked to refrain from answering the questionnaire if they were not users of SC. In the first wave, a total of 109 questionnaires were collected. In the second wave, a total of 130 responses were collected. In total, 239 responses were collected. The data was checked for missing values and outliers. This has resulted in removing 13 responses. Therefore, the complete responses accounted for 226 responses. The data is normally distributed, and no multicollinearity issues among the variables. Table 1 shows the results of data examination.

Table 1: Data Examination

Variable	Complete response	Normality		Multicollinearity	
		Skewness	Kurtosis	VIF	Tolerance
Organizational factor	226	0.73	0.88	1.30	0.76
Technological factor	226	0.91	0.30	1.55	0.64
Environmental factor	226	-0.41	0.51	1.59	0.62
SC adoption	226	0.81	-0.31	1.45	0.68
Organizational agility	226	0.55	0.44	1.51	0.66
Innovation performance	226	0.78	0.61	1.91	0.52

4. Results

This section presents the findings from the study, beginning with data examination, followed by a description of the respondents' background. The measurement model's reliability, convergent validity, and discriminant validity are assessed, and finally, the structural model's results and hypothesis testing are discussed.

4.1 Background of the Respondents

Table 2 summarizes the demographic and business characteristics of the respondents. The highest percentage of the responses are male (64.16%) working as managers of MSMEs (44.69%). The highest percentage of enterprises are small (44.69%) and working in the service sector (51.77%) and have been in operation between 5-10 years (42.48%).

Table 2: Background of Respondents

Variable	Label	Frequency (n = 226)	Percentage (%)
Gender	Male	145	64.16
	Female	81	35.84
Position	Manger	101	44.69
	Owner	49	21.68
	Director	64	28.32
	Others	12	5.31
Business size	Micro	76	33.63
	Small	101	44.69
	Medium	49	21.68
Business sector	Services	117	51.77
	Manufacturing	64	28.32
	Others	45	19.91
Years in Operation	Less than 5 years	72	31.86
	5–10 years	96	42.48
	More than 10 years	58	25.66

4.2 Assessment of the Measurement Model

Smart PLS 4 was deployed to assess the measurement and structural model. The factor loading of the variables is higher than 0.70 except for items OF1 from organizational factors and TF3 from technological factors as well as EF3 from environmental factors. The value of Cronbach's Alpha (CA) is higher than 0.70. In addition, the value of Composite reliability (CR) is higher than 0.70. Convergent validity was achieved because the value of average variance extracted (AVE) is greater than 0.50. The discriminant validity was achieved because the HTMT's correlation is less than 0.85 (Hair et al., 2023). Thus, the discriminant validity is achieved as shown in Table 3.

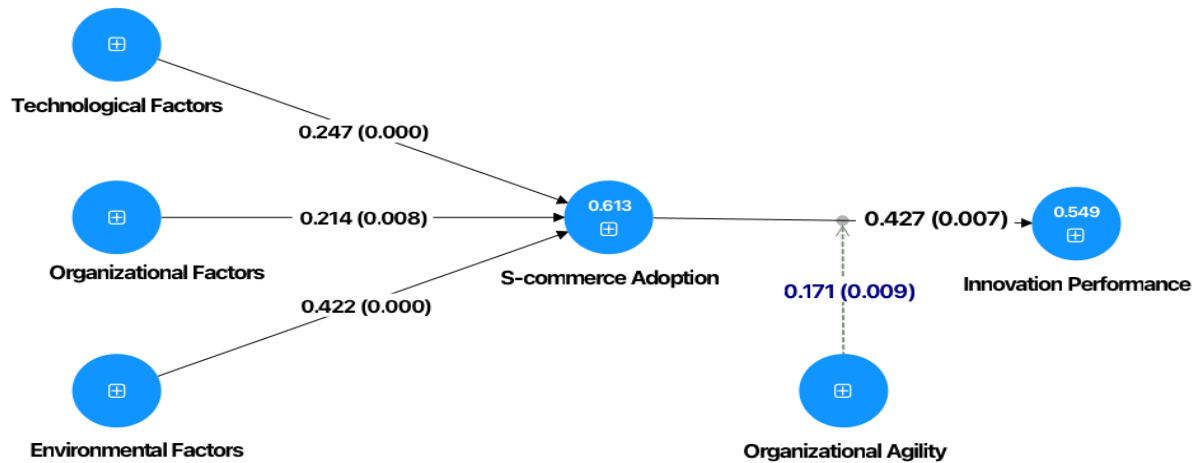
Table 3: Reliability and Convergent and Discriminant Validity

Construct	CA	CR	AVE	OF	TF	EF	SCA	OA	IP
Organizational factor	0.84	0.88	0.65	-					
Technological factor	0.81	0.87	0.63	0.41					
Environmental factor	0.85	0.89	0.68	0.48	0.46				
SC adoption	0.83	0.88	0.66	0.63	0.58	0.64			
Organizational agility	0.79	0.85	0.61	0.59	0.55	0.63	0.61		
Innovation performance	0.82	0.87	0.64	0.63	0.58	0.64	0.60	0.53	-

4.3 Structural Model and Hypotheses Testing

The structural model was evaluated using R^2 , F^2 and path coefficients. R^2 values were 0.613 for SC adoption and 0.549 for innovation performance, indicating substantial explanatory power. The effect size for all the paths is higher than 0.02 indicating that the effect size is medium. Figure 2 shows the structural model of this study.

Figure 2: Structural Model



Source: Self-developed

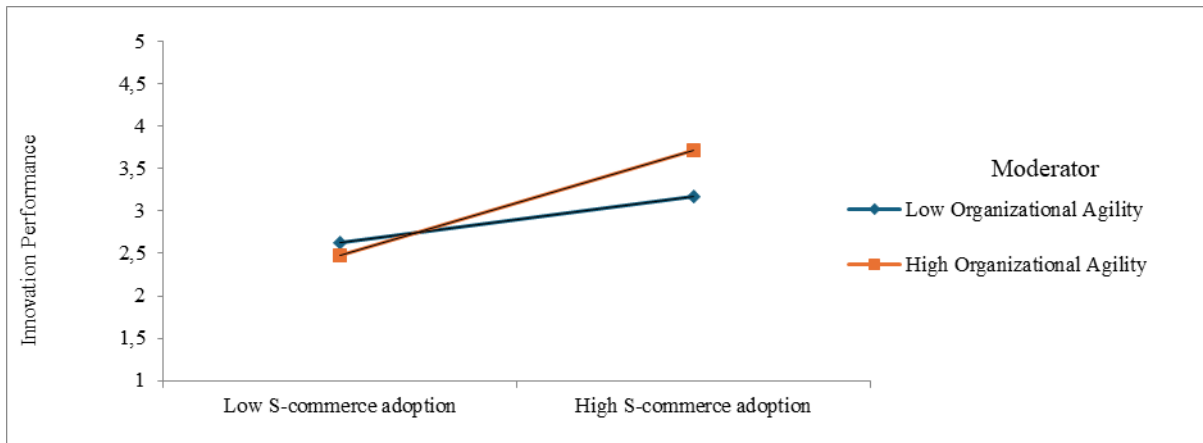
The hypotheses of this study were examined using the output of the structural model in Smart PLS 4. The first hypothesis, as shown in Table 4, was related to the effect of technological factors on SC adoption. The effect is positive with a coefficient (B) of 0.247 at a P-value less than 0.01. Thus, H1 is supported. Similarly, the H2 and H3 were supported, indicating that the effect of organizational factors (H2) and environmental factors (H3) is positive and significant. For H4, the SC affected positively the innovation performance with a coefficient of 0.427 and a p-value of less than 0.01. Therefore, H4 is supported as shown in Table 4.

Table 4: Hypotheses Testing Results

	B	Std	T-value	P values
Technological Factors -> SC Adoption	0.247	0.054	4.528	0.000
Organizational Factors -> SC Adoption	0.214	0.08	2.66	0.008
Environmental Factors -> SC Adoption	0.422	0.064	6.589	0.000
SC Adoption -> Innovation Performance	0.427	0.157	2.722	0.007
Organizational Agility x SC Adoption -> Innovation Performance	0.171	0.066	2.61	0.009

For H5, the interaction between organizational agility and SC adoption is positive. This indicates that the increase in the level of organizational agility as a moderator can increase the positive effect of SC on innovation performance. The two-way interaction, as shown in Figure 3, supports the moderating effect of organizational agility. The high organizational agility is higher than the low organizational agility, indicating that the interaction is positive.

Figure 3: Two-Way Interaction



5. Discussion

We examined the effect of technological, organizational, and environmental factors on SC adoption among MSMEs in Saudi Arabia. Since technological, organisational, and environmental factors greatly influence SC adoption, the findings corroborate the TOE framework. Organizational agility moderates SC innovation, emphasizing its value. Technological factors such as digital infrastructure and compatibility drove SC adoption. Digital infrastructure enables MSMEs to integrate SC platforms and interact with customers. Compatibility with current systems makes SC platforms easier to integrate. These findings show that growing nations like Saudi Arabia, where digital transformation is vital to economic success, require better technological preparation. The findings are in line with the findings of previous studies, where the technological factors have a significant impact on new technology adoption (S. S. Abed, 2020; Abu Bakar et al., 2019; Ahmad et al., 2019).

Organizational factors such as digital literacy and management support influenced SC adoption. Digital ventures require leadership commitment to overcome implementation problems and stimulate creativity. Corporate preparedness and operational efficiency improved with employee digital literacy on SC platforms. Digital transformation requires strategic leadership and workforce knowledge, according to these findings. The findings are in agreement with prior literature (Abu Bakar et al., 2019; Ahmad et al., 2019; AlSharji et al., 2018). Environmental factors which include in this study the competitiveness and government enhanced SC adoption. Competitive marketplaces require creative methods like SC to match client expectations. Vision 2030 has helped MSMEs adopt digital technology through legislation, training, and government incentives. This highlights the necessity of external facilitators in developing nations' technology adoption. The significant impact of environmental factors on SC adoption is in agreement with the findings of other previous studies (S. S. Abed, 2020; Abu Bakar et al., 2019; Ahmad et al., 2019; AlSharji et al., 2018; Effendi et al., 2020).

The strong effect of SC adoption on innovation performance supports the idea that real-time client engagement, collaborative interactions, and process optimization help organizations innovate. SC platforms enable MSMEs to tailor products, optimize operations, and improve consumer experiences, boosting product and process innovation.

Prior studies indicated that the usage of e-commerce has affected positively the SMEs' performance and the innovation performance (Abebe, 2014; Koh & Liu, 2024).

Agile enterprises performed better in SC and innovation. An agile enterprise may grasp new opportunities, react to changing market conditions, and alter strategy in real time. Organizational flexibility is crucial to maximize digital technology's benefits, and MSMEs in fast-changing markets like Saudi Arabia require agility.

6. Implications

This research contributes to the advancement of MSMEs' digital transformation and innovation literature. Integrating TOE with dynamic capability theory provides a complete understanding of SC adoption dynamics and innovation performance. The research extends these theoretical frameworks to emerging countries, where cultural, technological, and regulatory concerns impact technology adoption. Organizational agility as a moderating factor emphasizes the role of internal competencies in maximizing digital technology's benefits. The findings emphasize the role of technological, organisational, and environmental factors in digital transformation adoption, enriching the debate. They also stress organizational flexibility, making dynamic capability theory applicable to MSMEs' SC adoption.

This paper emphasizes the necessity for MSME management to invest in digital infrastructure and ensure system compatibility with emerging technologies. Management support is vital to adoption, emphasizing leadership commitment to digital transformation. Managers must teach people in digital literacy to use SC platforms effectively. This study has important insights for Saudi Arabian and similar policymakers. The findings show that government support, training, financial incentives, and a solid digital infrastructure are necessary for digital transformation. Policymakers should emphasize fostering a competitive business environment that encourages MSMEs to innovate and adopt new technologies.

7. Conclusion

This study examines the factors influencing Saudi MSMEs' SC adoption and innovation performance. The results show that technological, organisational, and environmental variables affect the adoption of SC, which in turn affects the innovation performance. Organizational agility's moderating role helps firms adjust to changing market conditions and capitalize on digital technologies. This study has limitations, yet it provides valuable information. Cross-sectional studies make causality determination difficult. Academics may study SC adoption and innovation performance over time using longitudinal research. It also used self-reported data, which is prone to social desirability bias. Respondents may have exaggerated SC adoption or innovation performance. The study focused on Saudi Arabia and on MSMEs, which limits the results' application to this context. This emphasis provides context-specific insights, but the conclusions may not apply to other nations or places with different cultural, technical, or legal settings.

Based on the findings and the limitations, we suggest future studies to examine the temporal evolution of SC adoption and its influence on innovation performance to

determine the sustainability of digital transformation benefits. Comparative research across countries or regions with different cultural, technological, or legal settings may reveal how these factors affect SC adoption and innovation. To further understand adoption, future studies may include company culture, technological instability, and environmental unpredictability. Research on certain sectors may identify SC adoption challenges and opportunities, providing specialized advice for business experts.

This study combines TOE with dynamic capability theory to improve theoretical understanding and practical insights for practitioners and policymakers. It emphasizes the need for durable digital infrastructure, wise governance, and supportive government policies for digital transformation. Despite its limitations, this study provides a solid foundation for ongoing research into SC adoption and its effects on innovation and competitiveness in developing economies.

Bibliography:

- Abebe, M. (2014). Electronic commerce adoption, entrepreneurial orientation and small- and medium-sized enterprise (SME) performance. *Journal of Small Business and Enterprise Development*, 21(1), 100–116.
- Abed, S. (2018). An empirical examination of Instagram as an s-commerce channel. *Journal of Advances in Management Research*.
- Abed, S. S. (2020). Social commerce adoption using TOE framework: An empirical investigation of Saudi Arabian SMEs. *International Journal of Information Management*, 53(March). <https://doi.org/10.1016/j.ijinfomgt.2020.102118>
- Abu Bakar, A. R., Ahmad, S. Z., & Ahmad, N. (2019). SME social media use: A study of predictive factors in the United Arab Emirates. *Global Business and Organizational Excellence*, 38(5), 53–68. <https://doi.org/10.1002/joe.21951>
- Ahani, A., Rahim, N. Z. A., & Nilashi, M. (2017). Forecasting social CRM adoption in SMEs: A combined SEM-neural network method. *Computers in Human Behavior*, 75, 560–578. <https://doi.org/10.1016/j.chb.2017.05.032>
- Ahmad, S. Z., Abu Bakar, A. R., & Ahmad, N. (2019). Social media adoption and its impact on firm performance: the case of the UAE. *International Journal of Entrepreneurial Behaviour and Research*, 25(1), 84–111. <https://doi.org/10.1108/IJEBR-08-2017-0299>
- Al-Kfairy, M., Shuhaiber, A., Al-Khatib, A. W., Alrabaee, S., & Khaddaj, S. (2024). Understanding trust drivers of S-commerce. *Heliyon*, 10(1).
- Al-Mutawa, B., & Saeed Al Mubarak, M. M. (2024). Impact of cloud computing as a digital technology on SMEs sustainability. *Competitiveness Review*, 34(1), 72–91. <https://doi.org/10.1108/CR-09-2022-0142>
- Al-Omoush, K. S., & Shuhaiber, A. (2024). Predicting user behavior on s-commerce platforms: a novel model. *Kybernetes*.
- Al-Tit, A. A., Omri, A., & Hadj, T. B. (2020). The driving factors of the social commerce intention of Saudi Arabia's online communities. *International Journal of Engineering Business Management*, 12, 1847979019899746.
- Albelaïhi, A., Alyahya, M., Aldieef, N., Alghasham, N., Alajlan, N., Alharbi, R., & Hadwan, M. (2019). Social commerce in Saudi Arabia: a literature review. *Int. J. Eng. Res. Technol*, 12(12), 3018–3026.

- Alhamami, A. A., Hashim, N. A., Abdul Hamid, R., & Ab. Hamid, S. N. (2024). The effect of external social media utilization on business performance of SMEs in Saudi Arabia: the mediating role of market orientation. *Cogent Business & Management*, 11(1), 2306974.
- Aljaafari, M. (2020). A Holistic Social Commerce Framework for Saudi Arabia. *Proceedings of the International Conference on Webbased Communities and Social Media*.
- Almahameed, M., & Obidat, A. (2022). Exploring the critical success factors of s-commerce in social media platforms: The case of Jordan. *International Journal of Data and Network Science*, 7(1), 163–174.
- Alotaibi, H. G., & Aloud, M. E. (2023). Investigating behavior intention toward s-commerce adoption by small businesses in Saudi Arabia. *International Journal of E-Business Research (IJEER)*, 19(1), 1–27.
- Alotaibi, S., & Aljaafari, M. A. H. (2024). Social Commerce in Saudi Arabia: Opportunities and Challenges in a Digital Society. *Sustainability*, 16(24), 10951.
- AlSharji, A., Ahmad, S. Z., & Abu Bakar, A. R. (2018). Understanding social media adoption in SMEs: Empirical evidence from the United Arab Emirates. *Journal of Entrepreneurship in Emerging Economies*, 10(2), 302–328. <https://doi.org/10.1108/JEEE-08-2017-0058>
- Andijani, A., & Kang, K. (2022). Social Commerce Acceptance after Post COVID-19 Pandemic in Saudi Women Customers: A Multi-Group Analysis of Customer Age. *Sustainability*, 14(16), 10213.
- Atcharyakarn, N., & Zhang, J. (2021). A systematic review of perceived value toward online review on s-commerce platform. *International Journal of Research in Business and Social Science* (2147- 4478), 10(3), 46–52. <https://doi.org/10.20525/ijrbs.v10i3.1127>
- Bhardwaj, P. N. (2020). Social Commerce, sometimes known as “S-commerce and its importance globally. *IMPACT OF COVID 19 ON*, 34.
- Boonpadung, P. (2020). Factors influencing the Use of Digital Technology by Secondhand and Bric-a-brac Buyers in Bangkok and Surrounding Provinces. *Journal of the Association of Researchers*, 254–272. <https://so04.tci-thaijo.org/index.php/jar/article/download/240897/164040/828265>
- Busalim, A. H., Che Hussin, A. R., & Iahad, N. A. (2019). Factors Influencing Customer Engagement in Social Commerce Websites: A Systematic Literature Review. *Journal of Theoretical and Applied Electronic Commerce Research*, 14(2), 0–0. <https://doi.org/10.4067/s0718-18762019000200102>
- Chen, W., Lin, Y., Bag, A., & Chen, C.-L. (2023). Influence Factors of Small and Medium-Sized Enterprises and Micro-Enterprises in the Cross-Border E-Commerce Platforms. *Journal of Theoretical and Applied Electronic Commerce Research*, 18(1), 416–440. <https://doi.org/10.3390/jtaer18010022>
- Chung, S., Lee, K. Y., & Choi, J. (2015). Exploring digital creativity in the workspace: The role of enterprise mobile applications on perceived job performance and creativity. *Computers in Human Behavior*, 42, 93–109.
- Denning, S. (2017). Strategic agility: Using agile teams to explore opportunities for market-creating innovation. *Strategy & Leadership*, 45(3), 3–9.
- Doz, Y. L., & Kosonen, M. (2010). Embedding strategic agility: A leadership agenda for accelerating business model renewal. *Long Range Planning*, 43(2–3), 370–382.

- Effendi, M. I., Sugandini, D., & Istanto, Y. (2020). Social Media Adoption in SMEs Impacted by COVID-19: The TOE Model*. *Journal of Asian Finance, Economics and Business*, 7(11), 915–925. <https://doi.org/10.13106/jafeb.2020.vol7.no11.915>
- Hair, J., Hair Jr, J. F., Sarstedt, M., Ringle, C. M., & Gudergan, S. P. (2023). *Advanced issues in partial least squares structural equation modeling*. saGe publications.
- Hajli, N., Sims, J., Zadeh, A., & Richaed, M. . (2017). A social commerce investigation of the role of trust in a social networking site on purchase intentions. *Journal of Business Research*, 71, 133–141.
- Hajli, Nick. (2020). The impact of positive valence and negative valence on social commerce purchase intention. *Information Technology & People*, 33(2), 774–791.
- Homayoun, S., Salehi, M., ArminKia, A., & Novakovic, V. (2024). The Mediating Effect of Innovative Performance on the Relationship Between the Use of Information Technology and Organizational Agility in SMEs. *Sustainability*, 16(22), 9649.
- Inauen, M., & Schenker-Wicki, A. (2011). The impact of outside-in open innovation on innovation performance. *European Journal of Innovation Management*, 14(4), 496–520.
- Jones, P., & Wynn, M. (2021). The leading digital technology companies and their approach to sustainable development. *Sustainability (Switzerland)*, 13(12), 1–12. <https://doi.org/10.3390/su13126612>
- Kadaba, D. M. K. M., Aithal, P. S., & KRS, S. (2023). Government Initiatives and Digital Innovation for Atma Nirbhar MSMEs/SMEs: To Achieve Sustainable and Inclusive Economic Growth. *International Journal of Management, Technology, and Social Sciences (IJMTS)*, 8(1), 68–82.
- Kayali, M., & Alaaraj, S. (2020). Adoption of Cloud Based E-learning in Developing Countries: A Combination A of DOI , TAM and UTAUT. *International Journal of Contemporary Management and Information Technology*, 1(1), 1–7.
- Kirchmer, M. (2022). Agile innovation through business process management: realizing the potential of digital transformation. *International Symposium on Business Modeling and Software Design*, 21–34.
- Koc, B., Sener, U., & Erhan Eren, P. (2022). Determinative Factors of Cloud Computing Adoption in Government Organizations. 3rd International Informatics and Software Engineering Conference, IISEC 2022. <https://doi.org/10.1109/IISEC56263.2022.9998286>
- Koh, J. M., & Liu, Y. (2024). Hierarchical business value of post-adoption cross-border e-commerce assimilation towards innovation performance: evidence from Malaysian manufacturing SMEs. *Asia Pacific Business Review*, 30(4), 782–807.
- Kosasi, S., & Yuliani, I. D. A. E. (2017). Improving organizational agility of micro, small, and medium enterprises through digital marketing strategy. 2017 2nd International Conferences on Information Technology, Information Systems and Electrical Engineering (ICITISEE), 68–72.
- Kumar, A., & Ayedee, D. (2021). Technology adoption: A solution for SMEs to overcome problems during COVID-19. *Forthcoming, Academy of Marketing Studies Journal*, 25(1).
- Lim, X. J., Cheah, J. H., Waller, D. S., Ting, H., & Ng, S. I. (2020). What s-commerce implies? Repurchase intention and its antecedents. *Marketing Intelligence and Planning*, 38(6), 760–776. <https://doi.org/10.1108/MIP-03-2019-0145>
- Monsha'at. (2022). *SME Monitor: Monsha'at Quarterly Report 2022*.

- Rodríguez Gutiérrez, P. I., Pastor Pérez, M. del P., & Collado Agudo, J. (2022). Social media: An essential capability for business effectiveness? *Electronic Journal of Information Systems in Developing Countries*. <https://doi.org/10.1002/isd2.12221>
- Shahzad, M., Qu, Y., Zafar, A. U., Rehman, S. U., & Islam, T. (2020). Exploring the influence of knowledge management process on corporate sustainable performance through green innovation. *Journal of Knowledge Management*, 24(9), 2079–2106.
- Shaikh, Z. P. (2025). Importance of Agility and Innovation Potential in Business: Transforming Organizational Structures and Processes. In *Business Transformation in the Era of Digital Disruption* (pp. 213–236). IGI Global.
- Shamsudheen, S. V., Ramadili Mohd, S. M., & Mahomed, Z. (2020). Do MSME patronage factors correspond to UAE Islamic banker perceptions?
- Sheikh, Z., Islam, T., Rana, S., Hameed, Z., & Saeed, U. (2017). Acceptance of social commerce framework in Saudi Arabia. *Telematics and Informatics*, 34(8), 1693–1708.
- Teece, D., Peteraf, M., & Leih, S. (2016). Dynamic capabilities and organizational agility: Risk, uncertainty, and strategy in the innovation economy. *California Management Review*, 58(4), 13–35. <https://doi.org/10.1525/cmr.2016.58.4.13>
- Tornatzky, L. G., & Fleischer, M. (1990). The processes of technological innovation. *The Journal of Technology Transfer*, 16(1), 45–46. <https://doi.org/10.1007/BF02371446>
- Venkatesh, V., Chan, F. K. Y., & Thong, J. Y. L. (2012). Designing e-government services: Key service attributes and citizens' preference structures. *Journal of Operations Management*, 30(1–2), 116–133. <https://doi.org/10.1016/j.jom.2011.10.001>
- Wang, P., & Huang, Q. (2022). Digital influencers, social power and consumer engagement in social commerce. *Internet Research*, June. <https://doi.org/10.1108/INTR-08-2020-0467>
- Wang, X. (2024). Digital Marketing Strategies and Consumer Engagement: Unveiling TikTok's E-Commerce Dynamics. *Advances in Economics, Management and Political Sciences*, 103, 182–189.
- Yikilmaz, I., & Cekmecelioglu, H. G. (2023). Organizational Agility as a Key Driver of Innovation Performance in SMEs and Large Enterprises. In *New Perspectives and Possibilities in Strategic Management in the 21st Century: Between Tradition and Modernity* (pp. 209–238). IGI Global.