

Exploring the Barriers to E-Commerce Adoption in Libyan SMEs: A case of China and Malaysia

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استكشاف العوائق التي تواجه تبني التجارة الإلكترونية في المؤسسات الصغيرة والمتوسطة الليبية: دروس مستفادة من تجارب الصين وماليزيا

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Abstract:

This study investigates the key barriers hindering the adoption of e-commerce among small and medium-sized enterprises (SMEs) in Libya. Despite the global shift toward digitalization, Libyan SMEs remain largely disengaged from the e-commerce ecosystem. Through qualitative inquiry and semi-structured interviews with SME owners, digital experts, and government officials, the study identifies major obstacles including inadequate infrastructure, lack of digital skills, weak regulatory frameworks, and low consumer trust. Drawing lessons from successful experiences in China and Malaysia, the study provides actionable recommendations to enable digital transformation in the Libyan SME sector.

Keywords: E-commerce, SMEs, Libya, Digital Transformation.

المخلص

تستكشف هذه الدراسة العوائق الرئيسية التي تؤثر على تبني التجارة الإلكترونية في المؤسسات الصغيرة والمتوسطة في ليبيا. فعلى الرغم من التقدم العالمي في مجال التجارة الرقمية، لا تزال الشركات الليبية تظهر تقدماً محدوداً في تبني حلول التجارة الإلكترونية. ومن خلال تحليل التجارب الناجحة لكل من الصين وماليزيا، تحدد هذه الدراسة العوامل الحاسمة للنجاح والتحديات السياقية في البيئة الليبية. وقد تم استخدام منهجية نوعية من خلال إجراء مقابلات شبه مهيكلة مع خبراء في مجال التجارة الإلكترونية ومديري شركات صغيرة ومتوسطة. كشفت النتائج عن أن ضعف البنية التحتية، وانخفاض مستوى الوعي الرقمي، وانعدام الثقة، وغياب الحوافز الحكومية تشكل أبرز العوائق. وتخلص الدراسة إلى توصيات استراتيجية من شأنها دعم بناء بيئة ملائمة لتبني التجارة الإلكترونية في ليبيا.

الكلمات المفتاحية: التجارة الإلكترونية، الشركات الصغيرة والمتوسطة، ليبيا، التحول الرقمي.

Introduction:

E-commerce has transformed global trade, enabling businesses to transcend geographical boundaries and operate more efficiently. In developed countries, the adoption of e-commerce is now mainstream; however, many developing countries, including Libya, struggle to harness its potential. Libya's socio-political instability, poor ICT infrastructure, and lack of strategic planning have impeded its e-commerce adoption. Conversely, countries like China and Malaysia have demonstrated rapid

digital transformation by supporting SMEs with comprehensive infrastructure, training, and policy reforms. This study aims to uncover the primary challenges Libyan SMEs face and leverage insights from global success stories.

Problem Statement:

While many developing economies have embraced e-commerce as a path to competitiveness and growth, Libya continues to struggle with integrating digital tools into its SME sector. Structural weaknesses in ICT infrastructure, coupled with the absence of supportive government policies and the limited capacity of SME owners, have created a stagnant e-commerce environment. Moreover, consumer trust remains critically low due to fraud risks and unclear legal protections. Without understanding and addressing these multifaceted challenges, Libya's SMEs are unlikely to compete in the global digital economy.

Objectives of the Study:

- To identify the primary barriers to e-commerce adoption among Libyan SMEs.
- To analyze the experiences of Malaysia and China as benchmark countries in digital transformation.
- To develop a contextual framework for understanding the adoption challenges in Libya.
- To provide policy-oriented recommendations for improving e-commerce readiness.

Contribution of the Study:

This study contributes to the limited body of research on digital transformation in North African contexts, specifically Libya. It introduces a practical conceptual framework grounded in real-world data and regional realities. Furthermore, it bridges the gap between global best practices and local implementation by aligning Libya's barriers with the success factors observed in Malaysia and China. The paper also offers a roadmap for policymakers, educators, and business leaders seeking to advance Libya's digital economy.

Literature Review:

E-commerce adoption has been extensively studied in Asia, Europe, and emerging markets. Previous research identifies infrastructure, consumer behavior, legal environment, and trust as core factors (Kim & Benbasat, 2009; Kumar et al., 2021). In China, state investment in digital infrastructure and integrated platforms like Alipay contributed to mass adoption. Malaysia took a more hybrid approach, combining public support with private innovation. Both countries exemplify how coordinated strategies can overcome structural constraints.

Libya, by contrast, faces a unique post-conflict economic landscape where digital adoption is hindered by fragmented institutions, power outages, low banking penetration, and limited internet coverage. Studies specific to Libya remain scarce, hence this research fills a significant gap.

Theoretical and Conceptual Framework:

This study is grounded in the Technology Acceptance Model (TAM) and extended with external variables such as:

- Internet Infrastructure
- Awareness Digital Literacy and Skills
- Government Support
- Consumer Trust

These factors influence Organizational Readiness, which mediates the effect on E-commerce Adoption.

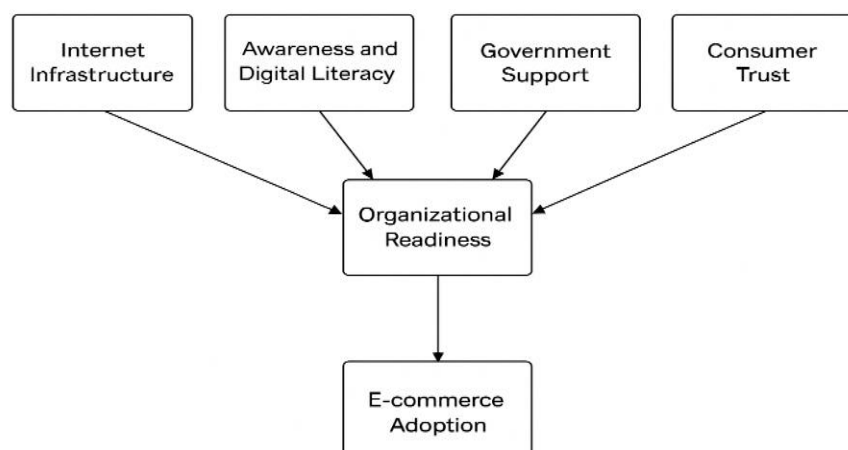


Figure 1: Theoretical and Conceptual Framework

Methodology:

1. Research Design:

A qualitative case study approach was used to understand the underlying issues preventing e-commerce growth in Libyan SMEs.

2. Participants:

Table 1: Participant Profile and Sampling Characteristics

Category	Number	Selection Criteria
SME Owners/Managers	8	Experience or interest in e-commerce
IT Professionals	4	Expertise in digital infrastructure
Government Officials	3	Involvement in ICT or commerce policies

3. Data Collection:

Data was gathered through semi-structured interviews lasting 30–45 minutes. Interviews were recorded and transcribed for analysis.

4. Sample Interview Questions:

Table 2: Sample Interview Questions Categorized by Theme

Theme	Sample Question
Infrastructure	What are the technical barriers to your online operations?
Awareness	Are you confident using digital platforms for business?
Trust and Legal Framework	Do you and your customers feel secure conducting online transactions?
Government Support	Has your business received any form of digital assistance or incentives?

Data Analysis:

This study employed thematic analysis, a flexible and robust qualitative method used to identify, analyze, and report patterns (themes) within data. It was chosen for its ability to provide rich, detailed, and complex accounts of qualitative data, especially in understudied contexts such as Libya's digital economy.

1. Justification for Thematic Analysis:

Given the exploratory nature of the study and the diversity of participant roles (e.g., SME owners, IT professionals, and policymakers), thematic analysis was the most appropriate approach. It allowed for capturing both the explicit content and latent meanings embedded in participants' responses. Unlike grounded theory or discourse analysis, thematic analysis is not tied to a particular theoretical orientation, which suited the context of this research that integrates TAM and contextual variables.

2. Analytical Procedure:

The data analysis process followed Braun and Clarke's (2006) six-step model, which ensured systematic rigor and transparency throughout the interpretation of the interview data. The process is detailed below:

Step 1: Familiarization with the Data:

All interview recordings were transcribed verbatim. The researchers repeatedly read the transcripts to immerse themselves in the data, taking preliminary notes and marking initial ideas related to barriers, perceptions, and suggested improvements.

Step 2: Generating Initial Codes:

Using NVivo 12 software, the researchers performed line-by-line open coding of the data. Each relevant sentence or phrase was tagged with a code representing a specific issue or insight. For example, the phrase "Internet is down most of the week" was coded as connectivity challenge, and "No training was ever offered" as lack of institutional support.

Step 3: Searching for Themes:

The codes were grouped into broader categories based on shared meaning. This led to the emergence of potential themes such as infrastructure limitations, digital literacy gaps, consumer trust issues, and

Step 4: Reviewing Themes:

All coded data were re-examined to ensure they formed coherent patterns. Some overlapping codes were merged, while others were separated for clarity. For instance, lack of training and digital illiteracy were merged under *digital skills gap*.

Step 5: Defining and Naming Themes:

Each theme was clearly defined and refined to capture its core essence. The researchers ensured each theme aligned with the research objectives and provided a unique contribution to understanding the barriers to e-commerce adoption.

Step 6: Producing the Report:

Illustrative quotes were selected for each theme to provide authenticity and support claims. The final themes were contextualized within the broader literature and policy/institutional weaknesses. the conceptual framework guiding the study.

Thematic Coding Matrix:

Table 3: Thematic Coding Matrix: Raw Data, Codes, and Emerging Themes

Raw Data Excerpt	Code	Theme
"Sometimes we lose internet for days."	Connectivity Issue	Infrastructure
"We don't know how to build a website or take online payments."	Digital Skill Deficiency	Awareness & Skills
"Customers are afraid of being scammed."	Consumer Distrust	Trust and Legal Framework
"No one from the government ever supported our digital efforts."	Policy Neglect	Institutional Support

Reliability and Validity Measures:

To ensure credibility, peer debriefing was conducted among three researchers during the coding process. Additionally, member checking was carried out by sharing preliminary findings with a subset of participants for validation.

- Dependability was ensured by maintaining a detailed codebook and audit trail.
- Transferability is achieved through rich descriptions and contextual analysis.
- Confirmability was strengthened through triangulation between interviews, field notes, and document reviews.

Observations and Trends:

Some consistent patterns emerged across interviews:

- Participants from urban areas (Tripoli, Benghazi) emphasized infrastructure and consumer trust.
- Participants from rural areas (AlJufra, Sabha) focused more on *access to training* and *institutional neglect*.
- All participants shared a desire to engage in e-commerce but felt "abandoned" by the system.

Summary of Thematic Results:

Table 4: Frequency of Key Themes Identified Across Interview Participants

Theme	Description
Infrastructure Challenges	Unstable internet, lack of delivery systems, frequent power outages
Digital Literacy Gaps	Limited skills in website design, online payment, digital customer interaction
Consumer Trust Issues	Fear of fraud, no refund mechanisms, no digital dispute systems
Institutional Weakness	Absence of support programs, unclear policies, no funding or incentives

Results:

The analysis of 15 semi-structured interviews revealed four dominant themes that consistently appeared across participants' narratives. These themes represent the critical barriers that hinder the adoption of e-commerce by Libyan SMEs.

1. Infrastructure Challenges:

The majority of participants emphasized the inadequacy of internet access, poor electricity coverage, and the absence of logistical infrastructure for online delivery and fulfillment. Even in major cities, consistent digital connectivity was cited as unreliable.

"Sometimes the internet just stops for the whole day. We can't do anything online.", SME Owner, Tripoli

Key Findings:

- 11 out of 15 participants mentioned repeated internet outages
- 9 reported lacks delivery partners or courier services in their areas
- 6 identified unreliable electricity as a daily challenge

2. Digital Literacy and Skills Gaps:

A large proportion of SME owners admitted a lack of awareness or training in managing online platforms. While some used social media informally, they lacked structured knowledge about e-commerce business models, digital marketing, cybersecurity, or integrating payment systems.

"I have a Facebook page, but I don't know how to convert it into a real store.", SME Owner, Benghazi
Key Findings:

- 10 out of 15 participants had no prior training in digital tools
- 7 were unaware of available online payment gateways in Libya
- Many lacked knowledge of data protection, search engine optimization (SEO), or online customer service

3. Trust and Legal Framework Deficiencies:

Participants frequently expressed concern over customers' lack of confidence in online transactions, due to the high risk of fraud and lack of enforceable digital consumer protection laws. Business owners themselves also feared cyberattacks and scams.

"Customers always ask what will happen if the product is fake or doesn't arrive. There's no one to complain to.", SME Manager, AlJufra

Key Findings:

- 12 out of 15 respondents cited low consumer trust as a major barrier
- Several reported losing customers due to fears over online payment fraud
- No participant could name a national regulation specifically governing e-commerce dispute

4. Institutional and Policy Neglect:

Participants agreed that government support for digital business transformation was minimal. There were no e-commerce development units, tax incentives, or SME-targeted digital incubators.

"We are ready to go online, but we need someone to show us how, and support us."— IT Consultant, Benghazi: Key Findings:

- 13 out of 15 respondents had never received any form of digital support
- No evidence of public-private partnerships promoting online commerce
- Participants expressed a desire for regulatory guidance and training access

Discussion:

The study's findings echo previous research in developing countries but add unique insights into Libya's transitional economy. The four emergent themes demonstrate that Libya's barriers to e-commerce adoption are multi-dimensional, intersecting technical, behavioral, and policy-level deficiencies.

1. Infrastructure Deficit: A Foundational Barrier:

The most immediate challenge to e-commerce adoption is physical and digital infrastructure. Without reliable internet, electricity, and logistics networks, even the most digitally competent SMEs cannot participate in online markets. This aligns with Westland (2021), who found infrastructure to be the primary enabler of e-commerce in China.

2. Capacity Building Deficits Among Entrepreneurs:

The lack of technical and digital skills among SME owners limits their ability to explore or sustain online businesses. While digital transformation in countries like Malaysia was supported by national training programs and university partnerships (Le & Koh, 2002), Libya lacks similar initiatives.

3. Consumer Trust is a Cultural and Legal Issue:

The absence of secure payment systems, dispute resolution mechanisms, and e-commerce laws creates a high-risk perception among consumers. As noted by Kim & Benbasat (2009), trust is a prerequisite for digital participation. In Libya, neither legal frameworks nor technological safeguards are sufficient to establish this trust.

4. Policy Vacuum and Government Inertia:

One of the most striking findings is the lack of coordinated policy or a dedicated agency for digital transformation. Libya's digital strategy remains fragmented. In contrast, Malaysia's Digital Economy Blueprint and China's e-commerce innovation zones played a vital role in aligning national efforts (Ramawati, 2022).

5. Interplay Between Themes: A Systemic Challenge:

The findings reveal that these challenges are not isolated. Infrastructure limitations fuel consumer distrust. Lack of skills prevents SMEs from engaging with whatever minimal platforms exist. Policy voids perpetuate all other barriers. This calls for a holistic national response, not fragmented efforts.

Policy Implications and Recommendations:

- Infrastructure: Invest in broadband access and stable electricity nationwide.
- Digital Literacy: Launch national training programs for SMEs.

- Legal Reform: Create e-commerce regulations with consumer protection, fraud penalties, and data privacy.
- Trust Mechanisms: Promote trusted third-party payment systems and transparent platforms.
- Institutional Support: Establish a digital commerce development authority or unit.

Conclusion:

Libya stands at a digital crossroads. Without targeted reforms and strategic investments, its SMEs risk exclusion from the global e-commerce boom. By learning from the pathways of Malaysia and China, Libya can chart a course that enhances economic inclusion, competitiveness, and technological sovereignty.

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