

Understanding the Factors Affecting Innovation Adoption in Traditional Industries

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ABSTRACT

This study aimed to explore the key organizational, external, and individual-level factors that influence the adoption of innovation within traditional industries in Tehran, with a focus on understanding how these dynamics facilitate or hinder innovation integration. A qualitative research design was employed, utilizing semi-structured in-depth interviews with 23 participants from various traditional industries, including textiles, handicrafts, ceramics, and agriculture-based businesses. Participants were selected through purposive and snowball sampling techniques, and data collection continued until theoretical saturation was reached. The interviews were transcribed, translated, and analyzed using thematic content analysis via NVivo software. Open coding, constant comparison, and thematic clustering were conducted to extract meaningful patterns. Three overarching themes emerged from the analysis: organizational readiness, external pressures and incentives, and individual-level factors. Organizational readiness encompassed leadership attitudes, innovation culture, resource constraints, strategic orientation, and structural limitations. External factors included market demands, government policy, technological trends, and industry norms. At the individual level, innovator traits, employee engagement, generational conflict, skill gaps, and innovation perceptions shaped adoption decisions. Participants highlighted both barriers—such as financial limitations, resistance to change, and regulatory challenges—and enablers, such as visionary leadership and peer learning. The results indicated that innovation in traditional industries is a deeply contextual and multi-level process. Innovation adoption in traditional industries cannot be approached through a one-size-fits-all framework. Instead, it requires a nuanced understanding of internal dynamics, environmental forces, and individual agency. The findings provide insights for policymakers, practitioners, and researchers seeking to support innovation in culturally rooted and low-technology sectors.

Keywords: Innovation adoption; traditional industries; qualitative research; organizational readiness; external pressures; individual factors; Tehran; thematic analysis.

Introduction

In the contemporary global economy, innovation has emerged as a fundamental driver of organizational competitiveness, adaptability, and sustainability. Across sectors, the rapid pace of technological change, globalization of markets, and shifting consumer preferences have placed increased pressure on firms to innovate and evolve. While innovation adoption has been widely studied in high-tech and knowledge-intensive industries, traditional industries—such as textiles, agriculture, ceramics, and handicrafts—continue to face significant challenges in integrating innovative practices despite their substantial contributions to national economies, employment, and cultural identity (Hervas-Oliver et al., 2014; Santamaría et al., 2009).



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Traditional industries, often characterized by labor-intensive production, low levels of digitization, and deeply embedded practices, are frequently viewed as resistant to change. Yet, in the face of environmental uncertainty, market competition, and technological disruption, these industries must confront the imperative to innovate not only to survive but to thrive. Innovation in this context may take various forms, ranging from incremental improvements in processes and products to the adoption of digital tools or new business models (Baregheh, Rowley, & Sambrook, 2009). Nevertheless, the pathways through which innovation is introduced, accepted, and institutionalized in traditional industries remain under-explored in both academic and policy literature.

One of the central challenges lies in the complexity of innovation adoption, which is influenced by an interplay of organizational, environmental, and individual-level factors. The diffusion of innovation theory, as posited by Rogers (2003), emphasizes the importance of communication channels, time, and social systems in influencing the rate of innovation adoption. However, applying such models to traditional industries requires contextualization, as these sectors often operate within unique socio-cultural, regulatory, and structural constraints. For instance, resistance to change may stem not from mere conservatism but from deeply ingrained intergenerational values, limited financial capacity, and lack of exposure to external knowledge networks (Kline & Rosenberg, 1986; Damanpour & Schneider, 2006).

Organizational readiness for innovation has been repeatedly identified as a key determinant of successful adoption. This includes not only tangible resources such as capital and skilled labor but also intangible assets such as leadership support, internal communication, and a culture of continuous improvement (Zahra & George, 2002). In traditional industries, hierarchical and centralized decision-making structures often limit bottom-up innovation and suppress employee involvement. Moreover, many small and medium-sized enterprises (SMEs) within these industries lack formal strategic planning mechanisms, further inhibiting the systematic adoption of new ideas (Tidd & Bessant, 2020).

External pressures and incentives also play a crucial role in shaping innovation behavior. Global market trends, customer expectations, international standards, and environmental regulations have increasingly compelled traditional industries to reevaluate their production models and adopt innovative solutions. Governments, through public policy and financial incentives, can act as important enablers or obstacles depending on the coherence and accessibility of their support mechanisms (Edquist, 2005). However, inconsistent policy implementation, bureaucratic hurdles, and a lack of targeted support for traditional sectors have been cited as reasons for the limited impact of government intervention (Asheim, Coenen, & Vang, 2007).

Technological advancement has introduced both opportunities and anxieties for firms in traditional industries. On the one hand, digital platforms, automation, and data analytics offer new avenues for enhancing productivity, reaching markets, and responding to customer demands. On the other hand, the technological illiteracy of workers, high costs of technology acquisition, and misalignment with traditional production processes present major barriers (Chesbrough, 2010). Moreover, the perception that innovation is synonymous with advanced technology often deters firms from exploring low-cost, process-oriented, or design-based innovations that may be more appropriate for their contexts (von Hippel, 2005).

Another critical dimension is the role of individual-level factors in facilitating or impeding innovation adoption. Research has shown that the attitudes, motivations, and competencies of organizational members significantly shape the innovation process (Scott & Bruce, 1994). In traditional industries, where family ownership and informal structures are common, leadership style, generational transition, and personal values often influence the strategic

direction of the firm (Zhou & Li, 2010). For example, younger members of a family business may advocate for digital marketing or e-commerce, while older generations prioritize stability and traditional methods.

The challenge of aligning these divergent perspectives is exacerbated by a lack of structured succession planning, unclear authority dynamics, and resistance to outside expertise. Furthermore, many traditional firms operate in localized ecosystems, with limited engagement in inter-organizational learning networks, which restricts the inflow of new ideas and practices (Boschma, 2005). Employee engagement is also limited in many such organizations, especially when innovation is perceived as a top-down imposition or when older employees lack confidence in using new tools (Coad et al., 2016).

In this context, it becomes essential to examine the nuanced and multi-level factors that influence how innovation is adopted—or resisted—in traditional industries. While previous studies have offered valuable insights into general innovation determinants (Crossan & Apaydin, 2010; Damanpour, 1991), there remains a dearth of qualitative, context-specific research that captures the lived experiences and perceptions of those embedded in traditional industrial environments. Given the cultural, historical, and economic significance of such industries in regions like the Middle East, South Asia, and parts of Europe, a deeper understanding of their innovation trajectories is both timely and necessary.

This study aims to address this gap by qualitatively exploring the factors that affect innovation adoption in traditional industries in Tehran, Iran. The research focuses on understanding the organizational, external, and individual-level influences that shape decision-making around innovation in selected sectors such as textiles, ceramics, agriculture-based production, and handicrafts. By employing semi-structured interviews and a thematic analysis approach, the study seeks to construct a grounded understanding of how innovation is perceived, negotiated, and implemented—or hindered—in these industries.

In doing so, this study contributes to the broader discourse on innovation in low-technology sectors, offering implications for policymakers, practitioners, and researchers interested in inclusive and sustainable industrial development. The findings underscore the importance of designing interventions and support mechanisms that are sensitive to the institutional realities, cultural logics, and operational capacities of traditional firms. Innovation, in this view, is not a one-size-fits-all solution but a process that must be co-constructed within specific socio-economic and organizational contexts.

Methods and Materials

Study Design and Participants

This study employed a qualitative research design with an exploratory approach to investigate the factors influencing innovation adoption in traditional industries. The rationale for using a qualitative method lies in its capacity to capture in-depth perspectives, experiences, and contextual nuances that are often overlooked in quantitative approaches. The participants were purposefully selected from various sectors of traditional industries in Tehran, including textiles, handicrafts, ceramics, and agriculture-related businesses. The selection criteria required participants to have at least five years of professional experience in their respective sectors and to be actively involved in decision-making or innovation-related processes within their organizations.

A total of 23 participants were recruited through purposive and snowball sampling techniques to ensure a broad yet relevant representation of voices from within the traditional industrial sector. The final sample size was

determined based on the principle of theoretical saturation, where data collection continued until no new themes or insights emerged during the interviews.

Data Collection

Data were collected using semi-structured, in-depth interviews conducted face-to-face in participants' workplaces or neutral meeting spaces, depending on their preference and availability. The interview protocol was designed to explore participants' experiences, perceptions, and challenges related to innovation adoption within their specific industrial context. Open-ended questions were used to encourage rich and reflective responses. Each interview lasted between 45 and 75 minutes and was audio-recorded with participants' consent. Field notes were also taken to document non-verbal cues and contextual observations.

All interviews were conducted in Persian, then transcribed verbatim and translated into English for analysis purposes. Ethical considerations, including informed consent, confidentiality, and voluntary participation, were strictly observed throughout the research process.

Data analysis

The data were analyzed using thematic content analysis, facilitated by NVivo software (version 12). The analysis followed Braun and Clarke's six-step framework: familiarization with the data, initial code generation, theme identification, theme review, theme definition, and final reporting. Both inductive and deductive coding strategies were employed. Inductive codes emerged from the data, while deductive codes were informed by the literature on innovation diffusion and organizational change.

Findings and Results

Theme 1: Organizational Readiness

Leadership Attitudes

Many participants emphasized that leadership plays a central role in innovation adoption. Some organizational leaders exhibited resistance to change and low-risk tolerance, often viewing innovation as a financial or operational threat. Conversely, others demonstrated visionary leadership and support for experimentation. As one textile manufacturer noted, "Our boss is too cautious. He says we can't afford to gamble with new machines" (P12). In contrast, a ceramic producer said, "If the leader supports new ideas, employees become confident to try" (P5).

Resource Availability

Several respondents reported that innovation initiatives are often hindered by financial constraints, lack of skilled labor, and limited access to modern technologies. Additionally, inadequate infrastructure, such as outdated facilities or unreliable internet, was cited as a barrier. One participant explained, "We want to innovate, but we don't have the money or the people who understand how to do it" (P7). This limitation was especially common in smaller family-run businesses.

Innovation Culture

The presence or absence of a supportive innovation culture significantly affected adoption efforts. Companies with a culture of employee empowerment, openness to learning, and internal collaboration reported smoother transitions. In contrast, a bureaucratic mindset often suppressed creativity. A participant from a handicrafts cooperative mentioned, "Here, if you make a mistake, you're punished. So no one dares to try something new" (P9).

Organizational Structure

The centralized decision-making model prevalent in many traditional firms delayed or discouraged innovation. A lack of dedicated innovation units, high formalization, and a rigid hierarchy limited flexibility. As one informant shared, “Everything has to go through five levels of approval. By the time it’s approved, the opportunity is gone” (P14). Such structural issues make experimentation slow and costly.

Strategic Orientation

A notable number of interviewees indicated that their organizations lacked an innovation-oriented strategy. There was often a focus on short-term planning, market survival, or reactive adaptation, rather than a clear innovation goal. One respondent commented, “We just try to meet the orders. Innovation sounds good but isn’t in our strategic discussions” (P6).

Theme 2: External Pressures and Incentives

Market Demands

External market demands such as changing customer needs, requests for customization, and export requirements have pushed some firms to consider innovation. The pressure of competitive markets has also been a driving force. A participant remarked, “Foreign buyers ask for new designs every season. If we don’t adapt, they’ll go elsewhere” (P11).

Government Policies

Government-related regulatory uncertainties, bureaucratic obstacles, and the lack of consistent innovation incentives were identified as barriers. However, some participants acknowledged the potential of supportive grants. As one industry veteran noted, “Sometimes there’s a grant, but the paperwork is a nightmare. Most of us give up halfway” (P4).

Technological Trends

The pressure from digital disruption and trends like Industry 4.0 has reached even the most traditional industries. While many recognize the need to modernize, the pace of technological change causes anxiety. “We hear about digital platforms, smart tools, but we don’t know where to begin,” said one carpet producer (P17).

Industry Norms and Networks

Many participants looked to benchmarking, inter-firm collaborations, or trade associations to guide innovation decisions. However, norms within traditional sectors often reinforce conservatism. One manager noted, “We only change when others do. No one wants to be the first and fail” (P3), highlighting the weight of collective behavior in decision-making.

Theme 3: Individual-Level Factors

Innovator Traits

The personal characteristics of individuals, especially owners or managers, influenced innovation decisions. Traits such as creativity, risk-taking, self-efficacy, and a learning mindset were common among innovators. As one participant reflected, “I don’t wait for things to get bad. I try to experiment, even if it doesn’t always work” (P19).

Employee Engagement

Participants stressed the importance of motivating employees and involving them in innovation. Some firms faced resistance, particularly from older staff who were less inclined to embrace change. A respondent shared, “Our young staff are eager, but the older ones resist even small updates” (P8).

Skill and Knowledge Gaps

Lack of training, technological illiteracy, and limited exposure to new ideas were identified as major obstacles. “We have good craftsmen, but they don’t know how to work with digital tools,” explained a workshop owner (P2). This gap hinders both the initiation and implementation of innovative practices.

Intergenerational Conflict

A number of businesses experienced intergenerational tensions, with younger members pushing for change and older leadership prioritizing tradition. These power dynamics often led to stalled innovation. One participant lamented, “My father says, we’ve done it this way for 30 years. Why change now?” (P21).

Ownership and Succession Issues

In family-run businesses, issues related to ownership concentration, inheritance-based leadership, and lack of transition planning were frequent. Innovation was often deprioritized in favor of maintaining control. A second-generation business owner said, “They expect me to follow their path, not build my own” (P10).

Perception of Innovation

Participants’ perceptions of innovation varied significantly. Some saw it as a threat, others as an opportunity. Misconceptions about what constitutes innovation—e.g., equating it only with technology—also existed. “People think innovation means buying robots. But it could be as simple as changing the way we pack,” noted a participant (P13).

Discussion and Conclusion

This study aimed to explore the multi-dimensional factors influencing innovation adoption in traditional industries by examining the experiences and perceptions of organizational stakeholders in Tehran. The findings revealed three overarching themes—organizational readiness, external pressures and incentives, and individual-level factors—each comprising several interrelated subcategories that either facilitated or impeded innovation efforts. These results align with and extend the existing body of literature on innovation adoption, especially within the context of low-technology and culturally rooted industries.

The first main theme, **organizational readiness**, highlighted the internal conditions that shape innovation trajectories. Participants frequently emphasized that the attitudes and behaviors of leaders play a critical role in either driving or stalling innovation. This finding is consistent with previous research indicating that leadership support and openness to risk are among the strongest predictors of innovation adoption in organizations {Scott & Bruce, 1994}. Leaders with a high tolerance for ambiguity and a strategic vision for change tend to foster a more receptive environment for experimentation and learning {Crossan & Apaydin, 2010}. Conversely, traditional leadership structures—often hierarchical and risk-averse—create rigid systems that suppress creative initiative, especially in sectors with a long legacy of craftsmanship and standardized processes.

Similarly, the subcategories of *resource availability*, *innovation culture*, and *organizational structure* echo prior studies emphasizing the structural and cultural preconditions for innovation. Limited financial resources and infrastructure—commonly cited by participants—are well-documented barriers in small and medium-sized enterprises (SMEs), particularly in developing contexts {Coad et al., 2016}. Moreover, the absence of a formal innovation culture and the prevalence of bureaucratic norms prevent knowledge sharing and collective problem-solving, which are essential for incremental innovation {Zahra & George, 2002}. These findings reinforce the argument that innovation is not merely a technological act but a cultural and structural process embedded in the organization’s DNA {Tidd & Bessant, 2020}.

The second theme, **external pressures and incentives**, captured how broader environmental dynamics compel or constrain innovation behavior. Participants noted that changing *market demands* and increased *global competition* pushed traditional firms to reconsider their practices—a finding supported by research on market-driven innovation, which shows that customer expectations are a major stimulus for transformation {Baregheh, Rowley, & Sambrook, 2009}. Export-oriented firms, in particular, face higher performance pressures and tend to adopt innovation more proactively in response to foreign buyer requirements {Santamaría, Nieto, & Barge-Gil, 2009}. This market responsiveness, however, is tempered by governmental inefficiencies and inconsistent policies. As participants noted, while innovation grants and programs do exist, their impact is diluted by bureaucratic red tape and limited awareness. This mirrors findings from Edquist's (2005) analysis of innovation systems, where the efficacy of public support often depends on how well policies are tailored to industry-specific needs.

Technological trends—particularly digitization—were a double-edged sword for many participants. While there was broad acknowledgment of the importance of keeping pace with technology, there was also apprehension about the cost, complexity, and relevance of emerging tools. Such ambivalence is well reflected in prior studies that discuss the challenges of digital transformation in traditional industries {Chesbrough, 2010}. Contrary to high-tech sectors that may benefit from economies of scale and established R&D pipelines, traditional sectors often struggle to identify where and how digital tools can add value without disrupting core artisanal or process-based identities {von Hippel, 2005}. Moreover, the reliance on *industry norms and networks* to benchmark practices highlights the role of social learning and peer effects, as emphasized in the diffusion of innovation theory {Rogers, 2003}.

The third theme, **individual-level factors**, added a critical micro-level dimension to the innovation discourse. The findings showed that innovation is not only organizationally and externally driven but is also shaped by individual agency, competencies, and perceptions. For example, firms led by individuals with *creative, risk-taking, and proactive mindsets* were more likely to implement innovative practices—even in the absence of strong organizational support. This finding aligns with Zhou and Li (2010), who argue that strategic orientations and dynamic capabilities at the individual level are instrumental in driving firm-level innovation, especially in emerging markets.

However, several challenges emerged at this level. *Employee engagement* and *skill gaps* were recurring concerns, particularly when introducing new technologies or methods that older employees perceived as threatening or unnecessary. This generational resistance is supported by literature on change management, which highlights how age and experience can negatively correlate with openness to innovation {Scott & Bruce, 1994}. Moreover, in family-run enterprises, *intergenerational conflict* and unclear *succession planning* often led to innovation paralysis. The reluctance of senior family members to relinquish control or embrace new ideas resonates with previous findings on organizational inertia in family businesses {Boschma, 2005}.

A particularly noteworthy insight was the *perception of innovation* among participants. Innovation was frequently misunderstood as requiring high-tech investment or radical transformation, leading to hesitation and misalignment with firm capabilities. This supports von Hippel's (2005) critique of technology-centric definitions of innovation and underscores the need to reframe innovation as a broader concept that includes incremental and frugal approaches.

Collectively, the results suggest that innovation adoption in traditional industries is a deeply contextual and layered process. It cannot be understood solely through technological determinism or economic rationality but must also account for cultural, structural, and psychological dimensions. The alignment of these findings with prior

empirical and theoretical work provides robust validation of the themes uncovered in this study, while also extending the literature by offering a grounded, context-specific exploration of traditional industry dynamics in Tehran.

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Authors' Contributions

All authors equally contributed to this study.

Declaration of Interest

The authors of this article declared no conflict of interest.

Ethical Considerations

All ethical principles were adhered in conducting and writing this article.

Transparency of Data

In accordance with the principles of transparency and open research, we declare that all data and materials used in this study are available upon request.

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