

# Project Governance under Economic Turbulence: Adaptive Decision Routines of Micro-Scale AEC Firms

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DOI: 10.36108/cbpm/2026.0182

## Abstract

Micro-scale architecture, engineering, and construction (AEC) firms are particularly exposed to economic turbulence due to limited financial buffers and high dependency on project-based cash flow. Existing studies largely document the survival strategies adopted by such firms under uncertain economic conditions; however, less attention has been paid to how these strategies are translated into project-level governance routines. This study addresses this gap by proposing a conceptual approach that explains how micro-scale AEC firms embed adaptive decision-making practices into their project governance structures. The study adopts a conceptual research design based on the synthesis and reinterpretation of findings derived from the authors' previously published empirical and review-based studies, including systematic literature reviews, qualitative interviews with micro-scale AEC firms in Türkiye, and analyses of crisis and post-crisis construction contexts. Through a secondary qualitative synthesis, firm-level strategies are reframed as adaptive project governance routines operating across key decision domains, including contracts, cash flow management, procurement timing, stakeholder relations, and project portfolio configuration. The findings suggest that micro-scale AEC firms do not rely on formalized management systems to cope with economic turbulence; instead, they develop repeatable governance routines that enable flexibility, rapid decision-making, and risk redistribution at the project level.

## Keywords:

Adaptive decision routines, Economic turbulence, Micro-scale AEC firms, Organisational Resilience, Project governance.

## 1. Introduction

The construction sector plays a key role in national economies, but it is highly sensitive to economic fluctuations (Olatunji, 2010; Adabre *et al.*, 2022). Periods of economic turbulence—such as inflation, exchange-rate volatility, financing constraints, and payment delays—pose significant challenges for construction projects. These conditions increase uncertainty in decision-making and affect whether projects are initiated, continued, or delayed. Micro-scale architecture, engineering, and construction (AEC) firms are vulnerable in such environments. These firms operate with limited financial resources, small client networks, and a strong dependence on project-based cash flow. Despite these constraints, they form a large portion of the construction sector and play an important role in maintaining housing production. Previous studies show that micro-scale firms adopt various survival strategies, such as diversifying services, strengthening stakeholder relationships, reducing costs, and selecting projects more carefully. However, these strategies are often discussed as isolated actions. There is limited understanding of how they are systematically

embedded into project-level decision-making processes. This gap highlights the need to examine how strategies are translated into governance practices. In response, this study aims to explain how survival and adaptation strategies are transformed into adaptive project governance routines in micro-scale AEC firms operating under economic turbulence. The main research question guiding this study is: How are these strategies translated into adaptive project governance routines? To address this question, the study adopts a conceptual research design. It is based on the synthesis and reinterpretation of findings from the authors' previous studies, including systematic literature reviews, qualitative interviews with micro-scale AEC firms in Türkiye, and analyses of crisis and post-crisis construction contexts. A secondary qualitative synthesis is used to map firm-level strategies to project-level governance routines across key decision areas such as contracts, cashflow, procurement, and stakeholder relations.

## 2. Economic Uncertainty, Resilience and Project Governance in Construction

The construction sector is highly sensitive to macroeconomic conditions. Fluctuations in inflation, exchange rates, interest rates, and material costs directly affect project feasibility, cost estimation, and

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investment decisions (Nguyen & Nguyen, 2020; Adabre *et al.*, 2022). In periods of economic instability, construction demand often decreases, while financial risks increase (Olatunji, 2010; Nguyen & Nguyen, 2020). Studies show that cost escalation, exchange rate volatility, and financing constraints are among the main factors influencing project performance in uncertain environments (Adabre *et al.*, 2022; Oteng-Abayie & Dramani, 2019). Economic uncertainty refers to unpredictable changes in macroeconomic conditions that affect project planning, investment decisions, and construction project execution. Uncertainty also affects key project decisions such as bid/no-bid and build/not-build choices (Li *et al.*, 2020). In addition, payment delays and non-payment are widely reported as major risks that disrupt cashflow and weaken contractor performance (Abdul-Rahman *et al.*, 2013). These conditions create a complex environment in which firms must continuously adapt their decisions to changing economic signals. Small and micro-scale construction firms are particularly vulnerable to economic turbulence due to their limited financial capacity and restricted access to formal financing. However, their small size also provides flexibility, allowing them to respond quickly to changing market conditions (Ulubeyli *et al.*, 2018). Previous studies identify several strategies used by construction SMEs during economic crises. These include cost reduction, diversification, selective market focus, and strengthening relationships with clients and suppliers (Tansey *et al.*, 2013; Lim *et al.*, 2010). Other studies highlight the importance of informal networks and alternative financing mechanisms, especially in highly uncertain environments (Gür *et al.*, 2023). In addition, firms often adjust their project portfolios by prioritising smaller and faster projects to maintain cashflow continuity. Although these strategies are widely documented, they are mostly presented as individual responses rather than structured organisational practices.

The concept of resilience has gained increasing attention in construction and management literature. Organisational resilience has been conceptualised as a meta-capability that enables organisations to anticipate potential threats, cope effectively with disruptions, and adapt to changing conditions through organisational capabilities, routines, and practices (Lengnick-Hall *et al.*, 2011; Duchek, 2020). Duchek (2020) further explains resilience as a dynamic process consisting of anticipation, coping, and adaptation phases, through which organisations continuously develop and renew these capabilities. In the construction sector, resilience has been linked to capabilities such as risk management, resource flexibility, and stakeholder coordination (Chih *et al.*, 2022). Studies on SMEs suggest that resilience is supported by flexibility, collaboration, and learning from previous crises (Duchek, 2020; Chih *et al.*, 2022). However, despite the growing literature, most studies focus on organisational

capabilities and outcomes, while giving limited attention to how resilience is operationalised at the project level. Organisational capabilities refer to the ability of firms to coordinate resources, knowledge, and routines to adapt to changing market conditions and sustain project performance (Duchek, 2020; Chih *et al.*, 2022).

Previous studies indicate that micro-scale AEC firms respond to economic uncertainty through a combination of financial, organisational, and market-oriented strategies. One of the most frequently reported approaches is the expansion of stakeholder networks, which enables firms to access new business opportunities, mobilise resources, and strengthen organisational resilience (Lengnick-Hall *et al.*, 2011; Duchek, 2020). Long-term collaboration with suppliers and subcontractors has also been identified as an important mechanism for reducing transaction costs and increasing operational flexibility under uncertain conditions (Chih *et al.*, 2022; Lim *et al.*, 2010). In addition, firms frequently diversify their services and target markets to reduce dependence on a single source of income, while prioritising smaller and shorter projects to maintain liquidity and minimise financial exposure during periods of economic instability (Ulubeyli *et al.*, 2018; Tansey *et al.*, 2013). The literature further highlights the growing role of digital communication and marketing tools in expanding market access and strengthening business continuity for small firms (Gür *et al.*, 2023).

While previous studies identify a range of survival strategies, they provide limited explanation of how these strategies are embedded in project execution and day-to-day decision-making. From a project governance perspective, governance concerns the way project decisions are structured, coordinated, and implemented throughout the project lifecycle. In large organisations, project governance is typically supported by formal contractual arrangements, predefined procedures, and clearly assigned decision-making responsibilities. However, such formal governance mechanisms are often difficult to implement in micro-scale firms because of their limited organisational structures, resource constraints, and high dependence on owner-managers. Consequently, project decisions are frequently guided by experience, trust, informal coordination, and repeated managerial practices rather than formal governance systems (Too & Weaver, 2014).

The reviewed literature shows that economic uncertainty significantly affects construction activities and that micro-scale firms adopt various strategies to survive under such conditions. It also highlights that resilience is a key concept in explaining how firms cope with disruptions. However, an important gap remains. Existing studies do not clearly explain how survival strategies are translated into project-level decision-

making practices. There is limited understanding of how these strategies become repeatable and structured governance routines within projects. This gap suggests the need to shift the focus from identifying strategies to understanding the mechanisms through which these strategies are implemented. In this context, project governance provides a useful lens, as it focuses on how decisions are structured, coordinated, and repeated within project environments.

### 3. Research Methodology

This study adopts a conceptual research design based

**Table 1:** Project Based Methodological Structure and Data Sources

| Research Stage           | Method                          | Data Source                       | Study / Project Output                                             |
|--------------------------|---------------------------------|-----------------------------------|--------------------------------------------------------------------|
| Literature Base          | Systematic literature review    | Academic databases                | Arıcı Üstüner & Balaban Ökten (2022); Toprak <i>et al.</i> (2024)b |
| Early Empirical Insight  | Qualitative interviews          | Micro-scale architectural offices | Arıcı Üstüner & Balaban Ökten (2016)                               |
| Expanded Empirical Study | Semi-structured interviews      | Micro-scale AEC firms             | Toprak <i>et al.</i> (2024)a                                       |
| Deepened Analysis        | Mixed-method (SLR + interviews) | Master's thesis dataset           | Toprak (2025)                                                      |
| Integrated Analysis      | Cross-study synthesis           | All datasets combined             | This manuscript                                                    |

Source: Developed by the authors.

on the synthesis and reinterpretation of findings from the authors' previously published empirical and review-based studies. The aim is to understand how micro-scale architectural firms respond to economic uncertainty. The study focuses on both theoretical knowledge and real-life practices. These include literature reviews, empirical studies, and a master's thesis. It aims to synthesize them and develop a conceptual understanding of adaptive decision-making (Table 1). Previous studies conducted within this research project show that research on micro-scale firms is limited, especially in the Turkish context. This gap highlights the need for empirical data. In the second stage, semi-structured in-depth interviews were conducted. This method allows the researcher to understand real-life experiences and decision-making processes. The interviews were carried out with micro-scale architectural firms operating in Istanbul. The firms were selected using a purposive sampling technique. The main criterion was firm size. All firms have fewer than ten employees, which fits the definition of micro-scale firms (European Commission, 2003). The interviews were conducted with firm owners or managers. This ensures that the data reflects strategic decisions. The interview questions were developed based on both the literature and previous studies conducted within the project. Participants were asked about their experiences during economic crises. They were also asked about the strategies they used and the lessons they learned. The analysis was conducted using qualitative content analysis (Arıcı Üstüner & Balaban

Ökten, 2016; Toprak *et al.*, 2024a). The data were coded and grouped into themes. An inductive approach was used. The analysis focused on identifying patterns in firm behavior and strategy use. Finally, the findings obtained from different studies were brought together. Literature findings, interview data, and thesis results were compared and integrated. This process allows the study to move beyond individual findings and to develop a conceptual framework that explains how firm-level strategies are transformed into adaptive project governance routines (Table 1).

### 4. Findings

The analysis shows that micro-scale architectural firms develop a set of repeated and experience-based practices when operating under economic uncertainty. These practices go beyond individual strategies. They function as routines that guide decision-making at the project level. The table below summarises the data sources used in this study, together with the research methods, sample characteristics, and key findings reported in each publication (Table 2 in Appendix 1).

#### 4.1. Survival Strategies Identified in Micro-Scale Firms

The findings show that firms adopt several key strategies to survive under economic pressure. These strategies are consistent across different studies and datasets. First, firms expand their stakeholder networks. New clients and projects are mostly obtained through personal connections and previous work. This creates a network-based business model. Second, firms strengthen their relationships with suppliers and subcontractors. These relationships help reduce costs and improve quality. In many cases, trust plays a more important role than formal contracts. Third, firms diversify their services and markets. Some firms start offering new services such as furniture design, visualization, or consultancy. Others try to enter new regions or countries. Fourth, firms use flexible production strategies. Small and fast projects are preferred because they provide quick cash flow. This

helps firms manage financial uncertainty. Fifth, firms increase their visibility through digital platforms. Social media, websites, and online portfolios are used to attract new clients. These findings are consistent with previous studies conducted within the project. They confirm that micro-scale firms rely on flexibility, adaptability, and informal structures (Table 3).

#### 4.2. From Strategies to Decision Practices

Although these strategies appear as separate actions, the synthesis of the empirical studies shows that firms consistently adopt similar responses when facing comparable economic challenges. For example, when confronted with cash-flow constraints, firms repeatedly prioritise smaller and shorter projects, request advance payments, or adjust procurement timing. When project pipelines weaken, they expand stakeholder networks and diversify their services to secure new business opportunities. Over time, these recurring responses become structured decision practices rather than isolated actions. These practices are not formally documented or standardised. However, they are applied consistently across projects and over time. As shown in

Table 4, firms repeatedly rely on existing client networks to secure new projects, maintain long-term relationships with trusted suppliers, prioritise short-term projects to preserve cash flow, and shift between service types according to market demand. The repeated use of these practices suggests that firms develop implicit decision-making routines that guide project-level decisions under economic uncertainty.

#### 4.3. Emergence of Adaptive Project Governance Routines

Drawing on the project governance perspective introduced in the literature review, the repeated practices identified across the empirical studies can be understood as adaptive project governance routines. Unlike formal project governance systems, where decisions are guided by predefined rules, contractual arrangements, and standardised procedures, micro-scale firms rely on flexible, experience-based routines that evolve through repeated project experience. These routines enable firms to govern projects through recurring practices across several governance domains (Table 5). In contract management, firms apply

**Table 3:** Survival Strategies and Supporting Evidence

| Strategy                             | Evidence from Previous Studies                                                                               | Interpretation                                               |
|--------------------------------------|--------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------|
| Stakeholder network expansion        | Interviews show firms obtain projects through personal networks (Toprak <i>et al.</i> , 2024a; Toprak, 2025) | Networks function as a primary project acquisition mechanism |
| Strengthening supplier relationships | Trust-based collaboration reduces cost and risk (Toprak <i>et al.</i> , 2024a; Toprak, 2025)                 | Supplier relations act as informal risk management tools     |
| Market and service diversification   | Firms expand into new services and markets (Toprak <i>et al.</i> , 2024a; Toprak, 2025)                      | Diversification increases adaptability under uncertainty     |
| Flexible production strategies       | Preference for small and fast projects (Toprak <i>et al.</i> , 2024a)                                        | Cash flow management becomes a key survival driver           |
| Digital visibility and marketing     | Use of social media and digital tools (Toprak, 2025)                                                         | Digital tools support resilience and continuity              |

Source: Developed by the authors

**Table 4:** From Strategies to Repeated Decision Practices

| Strategy                          | Observed Practice                           | Supporting Study                            | Interpretation                                 |
|-----------------------------------|---------------------------------------------|---------------------------------------------|------------------------------------------------|
| Network-based work acquisition    | Repeated reliance on existing contacts      | Toprak <i>et al.</i> (2024)a; Toprak (2025) | Strategy becomes a routine behavior            |
| Supplier selection based on trust | Continuous collaboration with same actors   | Arıcı Üstüner & Balaban Ökten (2016)        | Trust replaces formal control mechanisms       |
| Small project preference          | Continuous selection of short-term projects | Toprak <i>et al.</i> (2024)a                | Financial uncertainty shapes decision patterns |
| Flexible service production       | Shifting between service types              | Toprak (2025)                               | Firms adapt through iterative decisions        |

Source: Developed by the authors

**Table 5:** Emergence of Adaptive Governance Routines

| Governance Domain     | Observed Behaviour                                     | Supporting Study                                                          | Governance Interpretation       |
|-----------------------|--------------------------------------------------------|---------------------------------------------------------------------------|---------------------------------|
| Contract management   | Contracts are flexible and often not strictly enforced | Arıcı Üstüner & Balaban Ökten (2016)                                      | Informal governance dominates   |
| Risk management       | Decisions based on past experience                     | Arıcı Üstüner & Balaban Ökten (2016); Toprak (2025)                       | Learning-based governance       |
| Stakeholder relations | Trust-based collaboration                              | Toprak <i>et al.</i> (2024)a; Toprak <i>et al.</i> (2024)b; Toprak (2025) | Relational governance structure |
| Decision-making       | Rapid and situational decisions                        | All studies                                                               | Adaptive governance mechanism   |
| Dispute resolution    | Negotiation instead of legal process                   | Arıcı Üstüner & Balaban Ökten (2016)                                      | Informal conflict management    |

Source: Developed by the authors

contracts flexibly rather than relying on strict contractual enforcement. In risk management, project decisions are guided by previous experience and lessons learned from earlier projects. Stakeholder relations are maintained through long-term, trust-based collaboration with clients, suppliers, and subcontractors. Decision-making is rapid and situational, allowing firms to respond quickly to changing economic conditions. Finally, disputes are typically resolved through negotiation rather than formal legal procedures. Together, these recurring practices indicate that project governance in micro-scale firms is shaped by practical experience and relational coordination rather than formal governance structures.

The analysis shows that micro-scale architectural firms develop a set of repeated and experience-based practices when operating under economic uncertainty. These practices go beyond individual strategies. They function as routines that guide decision-making at the project level.

## 5. Discussion

This study examines how micro-scale construction firms respond to economic uncertainty. The findings show that firms use flexible, informal, and adaptive strategies. These findings are consistent with previous studies reporting that SMEs and construction firms rely on flexibility, organisational resilience, adaptive capabilities, and network-based responses to cope with uncertain environments (Lim *et al.*, 2010; Ulubeyli *et al.*, 2018; Chih *et al.*, 2022; Duchek, 2020). Organisational resilience has been conceptualised as a meta-capability developed through organisational capabilities, routines, and practices that enable firms to anticipate, cope with, and adapt to uncertainty (Lengnick-Hall *et al.*, 2011; Duchek, 2020). Consistent with this perspective, the present study shows that micro-scale construction firms operationalise resilience through adaptive project governance routines, including trust-based coordination, flexible contracting, network-based project acquisition, and experience-driven decision-making. Firms do not remain passive during crises. Instead, they actively adapt their behaviors. They change project types, adjust financial decisions, and rely on alternative resources. In addition, the study shows that resilience is not a single action but a process. This is in line with Duchek's (2020) model, which defines resilience as a process including anticipation, coping, and adaptation. The firms observed in this study demonstrate similar stages. First, they recognize uncertainty. Then, they respond through short-term solutions. Finally, they develop more stable practices over time. Another important finding is the role of flexibility and collaboration. The findings of this study strongly support this argument. Firms prefer to work with known actors. They rely on trust-based relationships. They avoid rigid contractual

structures. This behavior helps them reduce risk under uncertain conditions. Similarly, the importance of informal financial strategies is confirmed. Gür *et al.* (2023) show that micro and small firms have limited access to formal finance and therefore rely on informal borrowing mechanisms. The findings of this study align with this result. Firms prefer flexible payment systems and informal agreements instead of formal financial structures. The findings also highlight the importance of networks. In this study, networks are not only important but essential. Firms continuously rely on their existing networks to secure projects and resources. This indicates that networks function as a survival mechanism. Another important discussion point is the role of economic conditions. The literature shows that inflation, exchange rates, and financial instability strongly affect SMEs (Yarba & Güner, 2020). The findings of this study confirm this. Firms constantly adjust their decisions according to economic fluctuations. This creates a highly dynamic decision-making environment. However, this study goes beyond existing literature in one key aspect. Most previous studies identify the strategies that firms adopt in response to economic uncertainty. However, they primarily describe these strategies as isolated responses rather than explaining how they evolve into recurring project-level decision-making practices. In contrast, this study shows that these strategies become repetitive practices over time. Firms tend to use the same solutions in similar situations. For example, they repeatedly rely on the same networks or financial approaches. This repetition leads to the formation of routines. These routines shape how firms make decisions. They are not formally defined, but they are consistently applied. This finding adds a new perspective to the literature. It suggests that micro-scale firms should be understood through their everyday practices, not only through their strategies. For example, strategies such as stakeholder network expansion, service diversification, and flexible contracting become everyday practices when firms repeatedly rely on trusted client networks to secure projects, request advance payments, prioritise short-term projects to maintain cash flow, and negotiate contractual changes according to project conditions. These recurring practices ultimately evolve into adaptive project governance routines. Finally, the study also contributes to the understanding of governance in micro-scale firms. The findings also extend the discussion on project governance by showing that, in micro-scale firms, project governance operates primarily through informal and adaptive mechanisms rather than standardised organisational procedures. Consistent with the literature reviewed, project decisions are guided by experience, trust-based relationships, flexible contractual arrangements, and negotiation. These findings suggest that adaptive project governance in micro-scale firms emerges through recurring project practices instead of formalised organisational processes. Based on the

synthesis of empirical findings and previous studies conducted within this research project, this section proposes a practice-oriented framework. Rather than prescribing universal rules, the framework provides a reference framework for micro-scale firms operating under conditions of economic turbulence. It is structured around the recurring challenges identified in the empirical studies and the corresponding practices adopted to address them (Table 6).

each challenge independently. The framework also shows that many practices rely on informal mechanisms. Trust, experience, and personal relations play a central role. Formal governance mechanisms, such as standardised procedures, detailed contractual controls, and predefined decision-making processes, are limited in micro-scale firms because of their small organisational structures and resource constraints. Instead, firms develop flexible and adaptive ways of

**Table 6:** A Practice-Oriented Framework for Micro-scale Firm Resilience

| Challenge                                   | Observed Practice                                               | Supporting Studies                                                                   | Interpretation                                         |
|---------------------------------------------|-----------------------------------------------------------------|--------------------------------------------------------------------------------------|--------------------------------------------------------|
| Limited access to new projects              | Expanding stakeholder networks and relying on existing contacts | Toprak <i>et al.</i> (2024)a; Toprak (2025)                                          | Networks function as primary project acquisition tools |
| Financial instability and cashflow problems | Preference for small and fast projects; staged payments         | Toprak <i>et al.</i> (2024)a; Toprak <i>et al.</i> (2024)b; Gür <i>et al.</i> (2023) | Cashflow becomes a central decision parameter          |
| Rising material and production costs        | Strengthening relationships with suppliers and subcontractors   | Toprak <i>et al.</i> (2024)a; Kökçü (2020)                                           | Trust-based collaboration reduces cost uncertainty     |
| Market contraction and demand fluctuation   | Diversifying services and entering new markets                  | Toprak (2025)                                                                        | Flexibility increases adaptability                     |
| Difficulty in formal contract enforcement   | Relying on informal agreements and trust-based relations        | Arıcı Üstüner & Balaban Ökten (2016)                                                 | Informal governance replaces rigid structures          |
| High uncertainty in decision-making         | Using experience-based and rapid decision processes             | All studies                                                                          | Decision-making becomes situational and adaptive       |
| Limited visibility in competitive markets   | Using digital tools and social media for client acquisition     | Toprak (2025)                                                                        | Digitalization supports resilience                     |

(Source: Developed by the authors.)

These responses are shaped by experience, constraints, and immediate needs. One important point is that these practices are context-dependent. Not all firms apply all practices. The selection of practices depends on the firm's capacity, network, and market position. Therefore, the framework should not be understood as a universal model. It should be seen as a set of possible responses. Another important point is that these practices are interconnected. For example, network expansion is linked to project acquisition. Supplier relationships are linked to cost control. Small project preference is linked to cash flow management. This shows that firm behaviour is not composed of isolated decisions. Instead, decisions regarding project acquisition, cash-flow management, procurement, stakeholder relationships, and service diversification are interconnected. For example, expanding stakeholder networks supports project acquisition, which in turn improves cash-flow continuity, while long-term supplier relationships contribute to cost control and procurement flexibility. These interdependencies indicate that firms make decisions across linked project domains rather than addressing

working.-Across the empirical studies, similar practices were repeatedly observed among different micro-scale firms operating under economic uncertainty.-Finally, these practices can be understood as the building blocks of adaptive project governance routines. Across the empirical studies synthesised in this research, similar practices—including trust-based collaboration, flexible contracting, network-based project acquisition, and experience-driven decision-making—were repeatedly observed among micro-scale firms operating under economic uncertainty. The recurrence of these practices across different firms and studies suggests that they function as recurring project-level decision-making routines rather than isolated strategic responses. In this sense, the findings suggest that project governance in micro-scale firms is enacted through recurring project practices rather than exclusively through formal organisational mechanisms.

## 6. Conclusion and Further Research

This study was developed within a TÜBİTAK-supported research project and is based on a conceptual

synthesis of systematic literature reviews, empirical interview-based studies, and a master's thesis. By integrating these complementary sources of evidence, the study provides a broader and more comprehensive understanding of how micro-scale AEC firms respond to economic uncertainty. The findings show that micro-scale firms rely on flexible, experience-based, and often informal practices when operating under economic turbulence. These practices are not isolated actions. Across the empirical studies synthesised in this research, similar practices were consistently observed among micro-scale firms facing comparable economic conditions. These recurring practices suggest the emergence of adaptive project governance routines that support project-level decision-making. Over time, these patterns shape how firms make decisions at the project level. One of the key insights of this study is that firm behavior can be better understood through routines rather than individual strategies. While previous studies often focus on what firms do, this study explains how these actions are repeated and structured. This leads to the concept of adaptive project governance routines. These routines allow firms to respond quickly to uncertainty without relying on formal systems. The findings of this study can be useful for several groups. Practitioners can use the framework to better understand possible responses to economic uncertainty. Policy makers can benefit from understanding how micro-scale firms actually operate, rather than how they are assumed to operate. Researchers can use the study as a basis for further conceptual and empirical work on micro-scale firms and project governance. Despite these contributions,

the study has some limitations. The empirical evidence synthesised in this study is derived from qualitative studies conducted with micro-scale AEC firms operating in Türkiye, primarily in Istanbul, complemented by two systematic literature reviews. Across the empirical studies, data were collected from 28 micro-scale AEC firms, while the master's thesis contributed findings from an additional 10 architecture firms. Therefore, the proposed framework reflects the economic and institutional context of Türkiye and should be interpreted accordingly. Therefore, the findings reflect a specific economic and institutional context. In addition, the study focuses on micro-scale firms and does not directly compare them with larger organizations. Future research can build on this study in several ways. First, the proposed framework can be tested in different geographical contexts to examine its applicability. Second, comparative studies can be conducted between micro, small, and large firms to understand differences in governance structures. Finally, the concept of adaptive project governance routines can be further developed and operationalized in quantitative or mixed-method research designs.

### Acknowledgement

This study is conducted within the scope of a research project funded by the Scientific and Technological Research Council of Türkiye (TÜBİTAK) under the 1002 – Rapid Support Program (Project No: 125K269), titled “*Survival Strategies of Micro-Scale Construction Firms under Economic Crises.*”

### References

- Abdul-Rahman, H., Kho, M. & Wang, C. (2013), ‘Late payment and nonpayment encountered by contracting firms in a fast-developing economy’, *Journal of Professional Issues in Engineering Education and Practice*, Vol. 140 (2), Article 04013013.
- Adabre, A.P.C., Edwards, D.J., Osei-Kyei, R., Chan, A.P.C. & Ameyaw, E.E. (2022), ‘To build or not to build? A fuzzy synthetic evaluation of risks to sustainable housing in developing economies’, *Cities*, Vol. 125, Article 103644.
- Arıcı Üstüner, Y. & Balaban Ökten, B. (2016), ‘Mikro ölçekli mimarlık ofislerinde sözleşme sorunları’, In: *Proceedings of the 4th Project and Construction Management Congress*, Eskişehir, Türkiye, pp. 578–588.
- Arıcı Üstüner, Y. & Balaban Ökten, B. (2022), ‘Construction in uncertain economic conditions’, In: *Proceedings of the 7th International Project and Construction Management Conference (IPCMC 2022)*, Istanbul, Türkiye, pp. 504–513.
- Chih, Y.Y., Hsiao, C.Y.L., Zolghadr, A. & Naderpajouh, N. (2022), ‘Resilience of organizations in the construction industry in the face of COVID-19 disturbances: Dynamic capabilities perspective’, *Journal of Management in Engineering*, Vol. 38 (2), Article 04022002.
- Duchek, S. (2020), ‘Organizational resilience: A capability-based conceptualization’, *Business Research*, Vol. 13 (1), pp. 215–246.
- European Commission (2003), ‘Commission Recommendation of 6 May 2003 concerning the definition of micro, small and medium-sized enterprises (2003/361/EC)’, *Official Journal of the European Union*, Vol. L124, pp. 36–41.
- Gür, N., Babacan, M., Aysan, A.F. & Süleyman, S. (2023), ‘Firm size and financing behavior during the COVID-19 pandemic: Evidence from SMEs in Istanbul’, *Borsa Istanbul Review*, Vol. 23 (4), pp. 804–817.

- Lengnick-Hall, C.A., Beck, T.E. & Lengnick-Hall, M.L. (2011), 'Developing a capacity for organizational resilience through strategic human resource management', *Human Resource Management Review*, Vol. 21 (3), pp. 243–255.
- Li, G., Zhang, G., Chen, C. & Martek, I. (2020), 'Empirical bid or no-bid decision process in international construction projects: Structural equation modelling framework', *Journal of Construction Engineering and Management*, Vol. 146 (6), Article 04020050.
- Lim, B.T.H., Oo, B.L. & Ling, F. (2010), 'The survival strategies of Singapore contractors in prolonged recession', *Engineering, Construction and Architectural Management*, Vol. 17 (4), pp. 387–403.
- Nguyen, P.T. & Nguyen, Q.L.H.T.T. (2020), 'Critical factors affecting construction price index: An integrated fuzzy logic and analytical hierarchy process', *The Journal of Asian Finance, Economics and Business*, Vol. 7 (8), pp. 197–204.
- Olatunji, O.A. (2010), 'The impact of oil price regimes on construction cost in Nigeria', *Construction Management and Economics*, Vol. 28 (7), pp. 747–759.
- Oteng-Abayie, E.F. & Dramani, J.B. (2019), 'Time-frequency domain causality of prime building cost and macroeconomic indicators in Ghana: Implications for project selection', *Construction Management and Economics*, Vol. 37 (5), pp. 243–256.
- Tansey, P., Meng, X. & Cleland, D. (2013), 'A critical review of response strategies adopted by construction companies during an economic recession', In: Smith, S.D. & Ahiaga-Dagbui, D.D. (eds.), *Proceedings of the 29th Annual ARCOM Conference*, 2–4 September 2013, Reading, UK, Association of Researchers in Construction Management.
- Too, E. & Weaver, P. (2014), 'The management of project management: A conceptual framework for project governance', *International Journal of Project Management*, Vol. 32 (8), pp. 1382–1394.
- Toprak, B.N., Arıcı Üstüner, Y., Balaban Ökten, B. & Özkan, H.C. (2024a), 'Micro-sized AEC firms' economic strategies for firm survival in uncertain economic conditions', In: *Proceedings of the 8th International Project and Construction Management Conference (IPCMC 2024)*, pp. 546–552.
- Toprak, B.N., Yılmaz, A., Arıcı Üstüner, Y., Özkan, H.C. & Balaban Ökten, B. (2024b), 'A systematic literature review for micro-sized AEC firms' economic strategies for firm survival in uncertain economic conditions', In: *Proceedings of the 2nd International Conference: From Tradition to the Future – Design Thinking*, 13–14 November 2024, pp. 179–190.
- Toprak, B.N. (2025), *Mikro ölçekli Türk mimarlık firmalarının ekonomik krizlerde ayakta kalma stratejilerinin incelenmesi (Survival strategies of micro-sized architectural firms under economic uncertainty)*. Master's thesis. Istanbul: Fatih Sultan Mehmet Vakıf University.
- Ulubeyli, S., Kazaz, A. & Şahin, S. (2018), 'Survival of construction SMEs in macroeconomic crises: Innovation-based competitive strategies', *Journal of Engineering, Design and Technology*, Vol. 16 (4), pp. 654–673.
- Yarba, İ. & Güner, Z.N. (2020), 'Belirsizlik, makro ihtiyati politikalar ve şirket kaldırıcı: Firma düzeyinde kanıt', *Central Bank Review*, Vol. 20 (2), pp. 33–42.

**Appendix 1****Table 2:** Data Sources and Key Findings

| Study                                | Research Method                                                                        | Sample                                                                                                                                                                                                                                                                                                     | Key Findings                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|--------------------------------------|----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Arıcı Üstüner & Balaban Ökten (2016) | Qualitative research using semi-structured interviews and qualitative content analysis | 9 micro-scale architectural firms operating in Istanbul. All firms employed 10 or fewer permanent employees. Interviews were conducted with firm owners or managers through face-to-face or telephone interviews. Audio recordings were transcribed and analysed.                                          | The study found that project acquisition largely depended on client referrals and trust-based relationships. Contracts varied according to client type, while formal legal protection was used selectively because of cost and time constraints. Firms frequently encountered additional work requests, delayed payments, and contractual disputes, but preferred negotiation rather than legal action. Decision-making relied heavily on previous experience, informal trust, and flexible project management practices rather than formal contractual mechanisms.                                                                                                                                                                                                                                                   |
| Arıcı Üstüner & Balaban Ökten (2022) | Systematic Literature Review (SLR)                                                     | 168 studies were initially identified through Google Scholar. Following the application of inclusion and exclusion criteria, 19 studies were selected for detailed review. The selected publications addressed construction under uncertain economic conditions.                                           | The review found that existing studies could be grouped into five major research themes: (1) affordable housing, (2) cost estimation, (3) late payment and non-payment, (4) challenges associated with international construction markets and risk factors, and (5) critical success factors. Across these themes, the literature consistently demonstrated that economic uncertainty—including inflation, exchange rate volatility, interest rate fluctuations, and financing constraints—directly affects construction project performance, investment decisions, and project continuity. The review also highlighted that various decision-support models and risk management approaches have been proposed to reduce the impact of economic uncertainty on construction projects.                                 |
| Toprak et al. (2024a)                | Qualitative empirical study using semi-structured, in-depth interviews                 | Nine micro-scale AEC firms selected through convenience sampling. All firms employed fewer than ten people and represented architecture, interior design, urban design, restoration, visualization, and construction services. Interviews were conducted face-to-face with company owners in January 2024. | The study identified the initial survival strategies adopted by micro-scale AEC firms under economic uncertainty. Firms primarily relied on stakeholder networks to obtain new projects, strengthened supplier and subcontractor relationships, diversified their services and markets, shared office spaces to reduce overhead costs, preferred short-term projects to maintain cash flow, revised contracts according to inflation, purchased materials in advance to reduce price volatility, and increased marketing through digital platforms. The study concluded that the flexibility and adaptability of micro-scale firms constitute important competitive advantages during periods of economic uncertainty and that these findings provide the empirical foundation for a larger ongoing research project. |
| Toprak et al. (2024b)                | Systematic Literature Review (SLR) following a structured                              | 126 peer-reviewed publications selected after screening records retrieved from Scopus, Web of Science, Emerald, ASCE, and Google Scholar.                                                                                                                                                                  | The review demonstrated that research on the resilience of micro-sized AEC firms has increased considerably in recent years, particularly following the COVID-19 pandemic. Among the reviewed studies, 48 focused on COVID-19, 7 on natural disasters, 6 on war, and 3 on earthquakes. Only 17 studies specifically addressed the                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |

| Study         | Research Method                                                                                                                                                                                                                                | Sample                                                                                                                                                                                                                              | Key Findings                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|---------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|               | review protocol                                                                                                                                                                                                                                | Publications unrelated to the research objectives, duplicates, and non-English/Turkish studies were excluded. Bibliometric relationship and density maps were generated using Mendeley and VOS viewer.                              | construction sector, and only one focused on Türkiye, revealing a significant research gap. The review concluded that flexibility, organisational resilience, business networks, financing strategies, and adaptive capabilities are the dominant mechanisms supporting firm survival, while empirical evidence from the construction sector—particularly for micro-sized firms in Türkiye—remains limited, highlighting the need for further field-based research.                                                                                                                                                                                                                                                                                                                                                                                             |
| Toprak (2025) | Qualitative research using semi-structured interviews and inductive content analysis. Interview transcripts were coded and analysed to identify recurring survival strategies, which were subsequently grouped into broader conceptual themes. | 10 micro-sized architecture firms operating in Istanbul. Participants were founders or senior managers selected through purposive sampling based on firm size, continued operation during economic crises, and sectoral experience. | The study identified eight recurring survival strategies adopted by micro-sized architecture firms during economic crises: (1) liquidity and value preservation, (2) cash-flow-oriented contracting, (3) supply chain and inventory flexibility, (4) market and service diversification, (5) outsourcing and work-sharing, (6) operational downsizing, (7) digital marketing and network expansion, and (8) customer and stakeholder relationship resilience. These strategies were further synthesised into three higher-order resilience dimensions: financial flexibility, activity and market diversification, and cost reduction. The findings demonstrate that micro-sized firms rely on multiple complementary strategies simultaneously, highlighting organisational adaptability as a key determinant of survival under uncertain economic conditions. |

Source: Developed by the authors