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EFFICIENT, YET INSUFFICIENT: INVESTIGATING TRANSIT-ORIENTED POLICIES AT THE NATIONAL LEVEL

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The initial design concept of Transit-Oriented Development (TOD) has emerged as a key urban policy to address urbanization challenges worldwide, drawing on an integrated transportation and land use planning approach. Although TOD policies are typically formulated at the local level, addressing related subjects such as parking and zoning codes, some governance systems elevate them to the national level to guide lower-tier policies. For instance, in Iran – a newcomer to TOD – a national TOD policy has recently been introduced as part of a TOD policy package. However, there remains uncertainty about the extent to which a national guideline can contribute to successful TOD implementation, support local tiers, and ensure the achievement of TOD goals. The present research aims to address this gap by shedding light on the Iranian experience through a qualitative approach. The findings indicate that a National Transit-Oriented Development Guideline (NTODG) is among the 'efficient' instruments available to governments for advancing TOD culture – particularly in developing-country cities as newcomers to TOD, where the integration of transport and land use faces numerous challenges. However, NTODGs tend to be "insufficient" on their own, as they must be coordinated with other related policies under a "stable" political system and planning framework to turn TOD aspirations into reality.

***Key words*: Transit Oriented Development (TOD), policymaking, transport, land use, Iran.**

INTRODUCTION

The concept of Transit-Oriented Development (TOD) has long been recognized globally as a successful strategy for integrating transportation and land use planning, with the aim of promoting active and sustainable mobility, pedestrian accessibility, and social interaction – all under the umbrella of community livability. Initially rooted in urban design ideas such as *Pedestrian Pocket* and *Traditional Neighborhood Design* concepts (Calthorpe, 1997), TOD has since evolved into a key urban policy. Consequently, numerous TOD-centered research studies and practices have been conducted worldwide.

Although a successful TOD policy should integrate various sectors, actors, and levels into a cohesive policy package (Swenson and Dock, 2004), it can also take the form of sectoral categorization. In this approach, transportation policies (e.g., Transportation Demand Management or TDM) and land use planning or built environment policies (e.g., parking regulations) are developed separately, but remain strongly interconnected (Abdi, 2021). These policies can also be designed based on end-user demand-side measures, such as subsidies, or top-down supply-side measures, such as planning policy reforms (Abdi, 2021), as well as within the framework of "pull" and "push" policy dichotomies (Lund *et al.,* 2006). Additionally, TOD policies can be tailored to different levels of governance. While municipal (micro) levels often focus on design-oriented strategies for city-region corridors, station areas, and specific sites (ITDP, 2017; Ollivier *et al.,* 2021), TOD can also be integrated into higher (macro) level strategies. At this level, the adaptation

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of complex policies and coordination among various entities become critical and often challenging, particularly within complex governance structures (Hrelja *et al.,* 2020; Salat and Ollivier, 2017). Accordingly, Jamme *et al.* (2019) found that 35% of the reviewed TOD literature classified it under the policy, planning, and implementation category, compared to 29% for land use and transportation. This underscores the significance of TOD as a policy and planning tool at the governance level.

Although TOD policies are primarily established at the local (micro) level, governance systems are increasingly elevating such policies to higher tiers, such as the national level, to guide lower-tier policies and provide a robust framework for implementation. This may take the form of subject-based policies (e.g., public transportation, fuel) and/or specific TOD guideline packages, such as Iran's National TOD Guideline. However, significant uncertainty remains regarding the effectiveness of such national-level policies. Specifically, it is still unclear to what extent they can contribute to successful TOD implementation, support local tiers, and ensure the achievement of TOD goals. This study therefore aims to (1) assess the efficacy of TOD "macro-level" (national) policies and (2) explore the success factors and barriers to their adaptation, based on the perspectives and experiences of TOD experts in Iran. The recent experience of Iran's National TOD Guideline (NTODG) was examined as a case study in this research. Data were collected through a series of semi-structured interviews with 15 urban planning and transportation experts, including academics, policymakers, and practitioners. Although the present investigation sheds new light on the specific case of Iran, the findings contribute more broadly by offering fresh insights into upper-level TOD policymaking, particularly for countries considering the adoption of such policies. This contribution is achieved by providing a new perspective on the successes and challenges of the NTODG, the content of national TOD guidelines, and the relationships with other influencing factors.

TOD POLICY IN NATIONAL DRESS: A LITERATURE REVIEW

Urban planning policy is closely tied to a country's political system. In centralized, top-down approaches, the central government holds the authority to formulate, approve, and enforce regulations, whereas in bottom-up systems, municipal entities or local governments operate independently and have the authority to adopt local regulations. Walloth (2012) argued that an effective planning system should position itself within the interplay of fast (bottom-up) and slow (top-down) dynamics, acting quickly enough to initiate change while being deliberate enough to guide the actions of other actors. Top-down and bottom-up models are not confined to political systems; they can also be applied based on different planning scales. According to Pissourios (2014), top-down approaches are typically used at regional and strategic urban planning scales, while bottom-up approaches are employed at the local level. Linking these approaches is essential to formulating a robust planning framework. Even in bottom-up planning systems, such as Sweden's, collaboration between local, municipal, and regional planning is crucial (Björling and Capitao Patrao, 2024).

Regarding TOD policies, some countries have begun developing them at higher scales, such as the national level, while others have primarily focused on local-level design initiatives, including street-level design (e.g., Abdi and Soltani, 2022). As previously noted, it can be concluded that general planning systems define priorities. For instance, in countries with independent municipalities, such as those in North America and Western Europe, local governments are responsible for planning policies. In contrast, in countries with centralized systems, the authority lies primarily with central governments, and municipalities have significantly less control over general planning approaches. In the former system, the development of design tools at the urban design scale may be more critical, while in the latter, the creation of policy documents may constitute the initial step.

Nonetheless, it should be emphasized that, regardless of the planning system, successful TOD requires the integration of upper- and lower-level policies, encompassing both micro- and macro-level tools. In other words, national and/or regional plans, as well as local-level plans, should be developed in harmony, with strong coordination among various stakeholders, as highlighted in the work of other TOD researchers, such as Björling and Capitao Patrao (2024). When addressing larger scales, such as countries or regions, TOD documents should align with upper-level frameworks, necessitating a top-down approach. While this approach can be applied in any planning system, it may be more practical in centralized systems, where the entire planning framework is guided and controlled by the central government.

Some governments have directly established TOD policies at the national level, accompanied by subsequent executive guidelines. For instance, the Union Urban Development Ministry of India formulated the National Transit-Oriented Development (TOD) Policy to address urbanization challenges and improve the quality of life around urban transit corridors (Indian Ministry of Housing and Urban Affairs, 2015). The document explicitly highlights the need for a national TOD policy as a guiding framework with a catalytic role in responding to rapid urban growth (particularly in travel demand), given that state governments are responsible for managing urban spaces (Indian Ministry of Housing and Urban Affairs, 2015). Furthermore, the policy document outlines the vision, objectives, principles, implementation approach, Value Capture Financing mechanisms for TOD, legal frameworks, and recommendations for communication and outreach.

Most recently, Iran established a national TOD policy to promote the concept across the country in response to increasing urbanization and traffic-related challenges. Although planning for the integration of transportation and land use – such as locating high-density urban centers along mass transit lines – dates back several decades (Jafari and Hein, 2021; Sharifi *et al*., 2018), recent planning activities referencing Calthorpe's concept have gained renewed attention in recent years, culminating in the preparation and approval of the Iranian National TOD Guideline (NTODG) in 2020. According to a critical review by Mirmoghtadaee and Abdi (2021), which details the process, content, prospects, and challenges, the guideline

underwent a complex preparation and approval process. It is organized into four sections: (1) definitions (e.g., TOD definitions, scales, key principles, place types), (2) general principles (e.g., vision statement, goals, strategies, policies), (3) TOD reconceptualization within the Iranian planning system (e.g., adaptation of TOD levels to Iranian planning levels, station area typologies, expected outputs at each planning level), and (4) roles and responsibilities of various organizations in facilitating TOD implementation (e.g., the roles of key governmental stakeholders in supervision, revision, dissemination, capacity building, documentation, and funding of the guideline). When compared with the Indian version – the only national-level TOD guide developed in another country – it is evident that two main aspects neglected in the Iranian version are finance and communication. In other words, although the 'roles and responsibilities' of primarily governmental organizations are mentioned in the Iranian model, financial tools are not discussed. Additionally, the Iranian version does not consider awareness programs, or multi-stakeholder participation, both of which are given separate attention in the Indian national guide. This highlights the potential influence of a country's general planning approach on the development of planning policies.

However, it was expected that the national guideline would bring about a fundamental shift from car-oriented to transit-oriented development, at least to some extent. In reality, the opposite has occurred, particularly since changes in the upper-level governance structure in 2021 led to newly assigned authorities abandoning their predecessors' priorities. What remains unclear is the efficacy (and role) of such macro-level policies, among others, in implementing TOD projects, as well as the key factors contributing to this outcome. In response, this article reflects on these issues, drawing on a research project conducted in 2023, with the aim of identifying the weaknesses and potential challenges of the TOD guideline in Iran.

RESEARCH METHOD

Data collection

The present study aims to determine the extent to which national TOD policies can facilitate or hinder TOD projects, and to explore the potential success factors and barriers involved. To this end, a qualitative approach is well-suited for such an exploratory investigation into TOD practices. The authors found semi-structured interviews to be a valuable research tool for understanding the subject under study (Merriam, 2009). On this basis, a total of 15 semi-structured telephone interviews were successfully conducted – following 36 interview invitations sent with follow-up calls and emails – with three groups of TOD experts in Iran: academics (AC), policymakers and government officials (PO) at state and municipal levels, and TOD practitioners (PR), including planning consultants in the private sector (see Table 1). This reflects our efforts to include representatives from different stakeholder groups, ensuring that the results capture multi-perspective viewpoints and diverse ideas. The interviewees were selected purposively to ensure the trustworthiness of the qualitative research, targeting professionals with publications on land use and transportation integration, involvement in local TOD planning and implementation programs (i.e., practitioners), or experience as policymakers. To achieve this, a list of potential qualified interviewees was compiled, and invitations were sent after an initial screening process. We were deliberate in selecting participants based on their academic and professional expertise, although this approach resulted in a limited number of participants for the present study.

The discussion topics, which formed the core of the interview content, were designed based on the key research questions derived from the study's aim: (1) What role did the NTODG play, and how effective was it in turning TOD plans into reality? and (2) What are the driving factors behind this process?

Table 1. Interview participant profiles

Participant code	Group category	Affiliated organization/institute	TOD related experiences
PO1	Policymaking/ Government official	*Iran Ministry of Cultural Heritage, Tourism and Handicrafts*	• Representative in technical committees of the *Ministry of Road and Urban Development* • Member of the NTODG review team
PO2	Policymaking/ Government official	*Iran's Railway Company*	• Member of the supervision team for national inter-city rail TOD projects
PO3	Policymaker/ Government official	Transportation vice-presidency of the *Ministry of Road and Urban Development*	• Member of the NTODG review team • Member of the *Urban Street Design Guide* review team
PO4	Policymaker/ Government official	*Iran's Railway Company*	• Member of the supervision team for national inter-city rail TOD projects
PO5	Policymaker/ Government official	*Tehran Urban Renewal Organization*	• Experienced in applying the TOD concept to urban areas under regeneration
PO6	Policymaker/ Government official	*Iran's Railway Company*	• Member of the supervision team for national inter-city rail TOD projects
PO7	Policymaker/ Government official	Transportation vice-presidency of the *Ministry of Road and Urban Development*	• Member of the NTODG review team • Member of the *Urban Street Design Guide* review team
PO8	Policymaker/ Government official	Transportation vice-presidency of the *Ministry of Road and Urban Development*	• Member of the NTODG review team • Member of the *Urban Street Design Guide* review team

AC1	Academic (Architecture and urban planning)	*Road, Housing and Urban Development Research Center*	• Representative in technical committees of the *Ministry of Road and Urban Development*
AC2	Academic (Transportation researcher)	Public university	• Published works on TOD-centered topics, such as public transportation and walkability
PR1	TOD practitioner (transportation planning)	Consulting engineers (private sector)	• Member of the planning team for several TOD projects (e.g., *Urban Street Design Guide and TOD Strategic Plan for the City of Tehran*)
PR2	TOD practitioner (Urban planning)	*Tehran Urban Research & Planning Center, Tehran Municipality*	• Supervisor of TOD research projects in Tehran Municipality
PR3	TOD practitioner (Urban and transportation planning)	Planning consulting engineers (private sector)	• Member of the NTODG committee • Advocate for TOD and sustainable transportation
PR4	TOD practitioner (Transportation planning)	*Iranian Society of Consulting Engineers*	• Member of the NTODG committee • Conducted planning projects on TOD implementation for Qazvin City
PR5	TOD practitioner (Architecture and urban planning)	Planning consulting engineers (private sector)	• Member of the NTODG committee • Advocate for transportation and land use integration • Expert consultant for the Center for Station Area Complexes (Tehran Municipality)

Data analysis

A conventional qualitative approach was adopted for analyzing the interview content. The authors extracted codes, categories, and study themes (i.e., NTODG roles, success factors, and barriers) from the textual data without relying on a pre-existing conceptual framework or theory. To achieve this, all interviews were recorded after obtaining prior permission. These recordings were listened to repeatedly, transcribed, and organized based on content similarity. The major analytical categories were derived from the two primary discussion topics, with the unit of analysis being the textual content, including the leading factors of the NTODG. Initial codes were generated, followed by a second round of coding through re-coding. Finally, the concepts were synthesized in the third stage, resulting in analytical categories (i.e., study themes and subthemes) (Table 2). The authors served as the primary coders and analysts throughout the entire process. The interview results are presented in the next section, with references to the participants' codes (as assigned in Table 1).

FINDINGS

The qualitative analysis of the interviews identified seven themes, categorized into two main topics. First, the efficacy of the NTODG was critically examined, focusing on its role in either hindering or facilitating TOD implementation and its potential to foster a shared understanding of the TOD concept. Another theme that emerged was the NTODG's potential to integrate urban and transportation planning. Second, leading factors were categorized as a separate topic, encompassing the NTODG's content and structure, associated planning policies, and stakeholder awareness. The political context, particularly at higher levels, was also identified as a theme that can influence the success of any planning policy. Subthemes were categorized into two groups: challenges and limitations on one hand, and success factors and recommendations on the other (Table 2). These topics, themes, and subthemes are analyzed in detail in the following sections.

NTODG EFFICACY

NTODG: facilitator, yet obstacle

First, it is important to understand the participants' perspectives on the extent to which the NTODG has been effective in facilitating TOD project implementation for several years since its introduction. Unsurprisingly, five respondents directly stated that it was "not at all" effective [PO2, PO4, PO6, AC2, and PO8], arguing that the national guideline failed to achieve the expected TOD goals and outcomes. Others were more optimistic, noting that it is still in its early stages and, like other planning regulations, requires more time to yield results [AC1, PO5, and PO7]. On this point, PO7 emphasized that TOD should not be viewed as a short-term, one-off project, as "it is much more of a long-term process." A third group of interviewees [PO1, PR1, PR2, PR3, and PR4] highlighted that the NTODG has positively influenced urban plans in some cities, where interest in TOD principles under the NTODG framework is growing – despite limited evidence of tangible TOD outcomes. For instance, the NTODG has been officially adopted as a guideline in cities like Tehran [PR2, PR3]. However, many other cities remain largely unaware of its existence. Conversely, PO5 and PR1 raised concerns about the NTODG potentially acting as an obstacle, particularly when it risks overlooking the importance of local contexts.

How urban plans can benefit from NTODG

The participants concluded that the NTODG alone is insufficient, as many other prerequisites must also be addressed. More than half of the participants emphasized that the NTODG needs to be integrated with other planning mechanisms and agendas [PO1, AC1, PO4, PO5, PR4, PO6, PO7, and PR5], such as strategic regional and urban TOD plans based on the NTODG framework [PR4]. Additionally, they highlighted the need for complementary guides at both national and local levels to support the NTODG [PO1, PR2, PR4, and PO7]. Four participants suggested establishing a dedicated entity to coordinate and oversee TOD initiatives across upper and lower levels of governance [AC1, AC2, PO8, PR5]. PO6 further noted that adherence to TOD principles

Table 2. The efficacy of NTODG and its success factors and barriers: themes and subthemes

Discussion topic	Theme	Subtheme	
		Challenges and Limitations	**Success Factors and Recommendations**
NTODG efficacy (role)	Hindering and facilitating TOD projects implementation	• Limited acceptance and high levels of unawareness among cities • At an early stage, requiring more time for adoption • Unsuccessful in achieving TOD goals • Generalized policies that overlook local contexts • Confusing TOD typology for local experts	• Increasing interest in TOD principles
	Driving urban and transportation plans	• Many other influencing factors at play	• Establishment of a coordinating entity for TOD policies (e.g., NTODG) • Coordination with other planning mechanisms and agendas • Development of subsequent strategic regional and urban TOD plans • Consistency with TOD principles as a success indicator • Creation of subsequent guides attached to the NTODG
	Providing a common definition	• Insufficient to establish a common definition • Poorly introduced and inadequately advertised • TOD as a "public transportation policy" versus "place-making approach"	• Reconceptualization of TOD beyond merely increasing density
Leading factors	NTODG guideline's content and structure	• Lack of a clear implementation mechanism • No guarantees for implementation • No reflection of diverse local contexts	• A specified entity to track TOD policies e.g. NTODG • Restructuring with precise details and clear recommendations • Involvement of civil society, NGOs, and voluntary entities • Development of specific financial mechanisms • Implementation of specific appraisal methods
	Other associated planning policies	• Conflicts between stakeholders, policies, and decisions • Alignment of budget plans with mass housing policies	• Recognition of the significance of supportive (national) policies • Updating governance structures and related policies • Introduction of new agendas and checklists • Employment of qualified experts
	Political (policy) stability	• Misunderstanding risks for incoming authorities • Unstable management bodies, policies, and authorities • Politically driven (party-led) and subjective decision-making • Appointment of unqualified individuals based on political connections	• Interrelation between political stability and TOD success
	Understanding TOD concept	• No common definition of TOD • Risk of deviation from the original TOD concept • Lack of full awareness among consultants and urban authorities	• Implementation of educational and awareness programs

could serve as a success indicator for urban plans and as an appraisal metric for urban authorities during the post-implementation phase.

A national policy, a national definition

Most participants highlighted that the guideline was not adequately introduced to key stakeholders, including authorities [PO2], and criticized the NTODG's content, arguing that it is insufficient to establish a common definition accepted by its users. PR1, however, believed that the NTODG could reconceptualize TOD in Iran to some extent, moving beyond the simplistic idea of increasing density in station areas. When asked to define TOD in their own terms, most interviewees prioritized "TOD as a public transportation policy" over a "place-making approach" [PO1, PR2, AC1, PO3, PO4, PR3, PR4, and PR5]. Consequently, most participants argued that developing public transportation systems and restricting private car use are key to achieving TOD goals.

Leading factors

What a national guideline should (not) include

- The content of the NTODG document was a major topic of discussion during the interviews. Most interviewees criticized the NTODG's content and structure for providing overly general guidelines without a clear implementation mechanism for future urban plans (Table 3). They noted the absence of guarantees for implementation, such as incentives, requirements, mandatory tasks, and other supportive measures. More importantly, participants expressed concern about the failure to account for local characteristics across the country, particularly due to the proposal of a uniform TOD typology for cities with diverse features, such as varying sizes. On this issue, there was agreement among participants on the need to reflect various urban contexts based on: (a) climate, geography, socio-economic features, structure, form, and density patterns; (b) access to public transportation (PT); (c) the national function of the city within its regional network; and (d) city size, with a focus on metropolitan areas and large cities. Their recommendations extended further, proposing a restructuring of the NTODG content through the following strategies:
- Adding precise details, clear recommendations, and explicit explanations of the subject;
- Defining the roles of civil society, NGOs, voluntary entities, and advocates;
- Establishing a dedicated entity to oversee and track TOD policies, such as the NTODG; and
- Outlining financial mechanisms, appraisal methods, and socio-cultural requirements.

Policy coordination: a powerful tool for TOD policy success

The discussions revealed that coordination with other planning policies is one of the most critical factors behind the success of TOD policies. While the majority of interviewees acknowledged that supportive national policies, such as the NTODG, are essential for implementing TOD projects [PO1, PR2, PO2, AC1, PO5, PR4, AC2, PO7, PO8, and PR5], they also called for aligning other national policies and regulations. These include land value capture mechanisms [PO3], car toll systems, practical budgeting, and revised transportation master plans [AC1], alongside structural changes in upper-level governance, such as within ministries [PR1, PO3]. To facilitate the realization of the NTODG, interviewees emphasized the need for a new set of revised agendas and checklists for urban plans, aligned with TOD principles [PO1, PR1, PR2, PO2, AC1, PO3, PO4, PO5, PR3, PR4, PO6, and PR5]. Additionally, they highlighted the importance of employing qualified transportation and planning consulting engineers – experts – to ensure effective implementation [PO2, PO6].

On the other hand, participants highlighted the existence of conflicting policies that reflect a fragmented transportation and urban planning system, which undermines the efficacy of the NTODG. For example, the mass housing construction policy was heavily criticized. PO1, PO5, and PR3 expressed disappointment with mass housing projects in peripheral areas, noting that they contradict TOD principles. Such policies contribute to budget shortages and create pressure to sell additional floor area ratio (FAR), leading to the neglect of TOD policies [PO2]. Additionally, participants pointed to conflicts between stakeholders, policies, and decisions [AC2], including investments in urban projects that lack a TOD focus [PO2, PR5], subsidized fuel policies [PO2], and decisions that undermine public transportation [AC1].

*Table 3. Analysis of participants' responses about the content of the guideline**

	Participants														
	PO 1	***PO 2***	***PO 3***	***PO 4***	***PO 5***	***PO 6***	***PO 7***	***PO 8***	***AC 1***	***AC 1***	***PR 1***	***PR 2***	***PR 3***	***PR 4***	***PR 5***
Criticism			■	■	■	■	■	■	■			■	■		
Absence of guarantees for implementation			■	■	■	■	■	■	■						
Failure to account for local characteristics					■	■	■								
Uniform TOD typology									■			■			
Recommendation-contextualization		■			■				■			■	■	■	
Natural, socio-economic, physical features					■				■						
PT accessibility														■	
City function within regional network		■											■		
City size												■			
Recommendation-other		■	■		■	■	■		■				■	■	■
Precise details and recommendations									■				■	■	
Non-governmental roles						■									
TOD policies tracks-entity									■						
Financial and appraisal mechanisms		■	■		■	■	■		■						■

* Grey fields indicate that participants mentioned that Criticism/ Recommendation-contextualization/ Recommendation-other.

A stable policy system matters

In line with the results discussed above, nearly all interviewees emphasized that the realization and success of TOD policies are strongly tied to national-level policies and political stability. This means that any changes in higher-level leadership – such as the president, ministers, or local mayors – could lead to shifts in broader policies, including TOD policies. PR2 stated:

> *"When a national document is approved, its implementation is mandatory. However, this process is not always straightforward. Changes in political leaders and municipal-level authorities can hinder or delay implementation. They may prioritize other issues and simply neglect the document if it does not align with their ideals or priorities."*

Similarly, PR5 added:

> *"Consistency is key to successful planning. In cases where there are rapid changes in the management system and a strong link between the personal preferences of authorities and their decisions—especially in the absence of a robust, independent system of regulations and obligations—changes in leadership often result in changes in policies."*

New policies may even directly contradict TOD principles. This is evident in affordable mass housing projects in peripheral urban areas, as discussed earlier, where lower land prices make these locations attractive despite poor access to public transportation. While the initial investment may result in lower housing costs, long-term living expenses and environmental impacts are significantly higher. Additionally, the short tenure of urban management and the personal preferences of elected authorities can influence decisions and priorities, as they may interpret TOD based on individual perspectives.

Respondents criticized this situation in Iran. AC2 noted a lack of stability due to frequent changes in the policymaking system, with many positions being temporary or short-term. Under such conditions, TOD decisions are influenced by shifting management bodies, urban policies, and authorities [PO2, PO5, PR3, and AC2]. New appointments are often based on political connections rather than qualifications [PO1], leading to unqualified individuals in key roles. As a result, many decisions are driven by personal preferences and political agendas (party-led) [PR1, PR2, PO3, PO4, and PO5], compounded by a poor understanding of TOD's importance [PR3].

Full awareness drives TOD success

The interviewees criticized the lack of a common definition and the deviation from the original concept during the process of translating general policies into practice [PO4, PR3, and PO6]. They noted that local authorities often interpret the concept based on their own understanding and act accordingly. This issue becomes more pronounced in metropolitan areas, where urban management systems hold significant power and independence, potentially acting in ways that do not fully align with NTODG principles. This can create a chain reaction, as medium and small cities often look to metropolitan areas as role models for development.

Additionally, there is limited awareness among transportation and planning consultants, as well as urban authorities, regarding the NTODG recommendations and how to apply them [AC1, PO4, PR3, PR4, PO6, and AC2]. In response, interviewees emphasized the need for educational and awareness programs for planning experts and authorities to better understand and implement NTODG recommendations [PR3, AC2, and PO7].

DISCUSSION

An initial objective of the study was to assess the extent to which the national TOD guidelines have been effective in achieving TOD goals. The study found that, despite some limited advantages, the NTODG may increase risks and even act as a barrier. Specifically, the prescriptive nature of the NTODG's content – such as its TOD typology – raises the risk of imposing uniform obligations without considering local contexts. This approach can confuse local experts, particularly in a country with diverse urban landscapes, despite the well-documented importance of context sensitivity in TOD implementation (Aston *et al.,* 2016; De Vos *et al.,* 2014; Higgins and Kanaroglou, 2016; Lyu *et al.,* 2016; Ortuño-Padilla *et al.,* 2017; Qviström and Bengtsson, 2015; Thomas *et al.,* 2018).

In addition, despite the significant progress made in establishing a common definition among TOD stakeholders (Abdi, 2021; Abdi and Lamíquiz-Daudén, 2022; Thomas *et al.,* 2018; Thomas and Bertolini, 2015), the findings revealed that the NTODG failed to foster a shared understanding of the TOD concept among various stakeholders at the national level. For instance, it did not achieve a balance between the two core pillars of TOD: "sustainable urban planning" – which emphasizes compact, mixed-use, walkable neighborhoods with open green spaces and balanced density distribution – and "sustainable transportation planning" – which focuses on integrated land use and transportation, reduced car dependency, access to public transit, parking management, and efficient origin-destination planning (Allan *et al.,* 2022). TOD experts viewed it as a multifaceted strategy, whose success in shaping urban plans and subsequent urban design projects depends on numerous influential factors.

The second objective of this study was to identify the leading factors behind the successes and failures of the NTODG, as discussed above. The study distinguished between internal and external factors influencing the success of the NTODG. Internally, the content of the guideline should go beyond basic definitions by providing detailed implementation mechanisms and addressing the diverse contexts of urban settlements across the country. Externally, the guideline can contribute by identifying opportunities for policy coordination, defining roles and responsibilities, and establishing educational programs to enhance stakeholder engagement and awareness. It should also advocate for political continuity by involving upper-level laws and legislation.

Regarding political continuity, it is widely agreed that TOD is a long-term process, requiring strong and consistent leadership vision for success. Conversely, frequent changes in leadership and a lack of consistent vision hinder

the achievement of TOD goals (Ollivier *et al.,* 2021). In many developing countries, it is common for the entire administration system or adopted policies to be replaced with the arrival of a new mayor or governor, as seen in the case of Bangkok (Wu and Pojani, 2016). In contrast, project continuity has been a key factor in achieving transport-land-use integration and the success of TOD-based initiatives in cities like Curitiba and Bogotá (Cervero, 2013; Willoughby, 2013). Thus, the lack of political and technical continuity remains one of the most significant barriers to implementing TOD in developing countries, including Iran.

In some cases, the NTODG may even act as a hindrance when local initiatives are blocked by outdated upper-level guidelines. Additionally, establishing a common definition of TOD heavily depends on the full awareness of all stakeholders involved in TOD policy, planning, and project implementation, though political will and comprehensive guidelines also play critical roles.

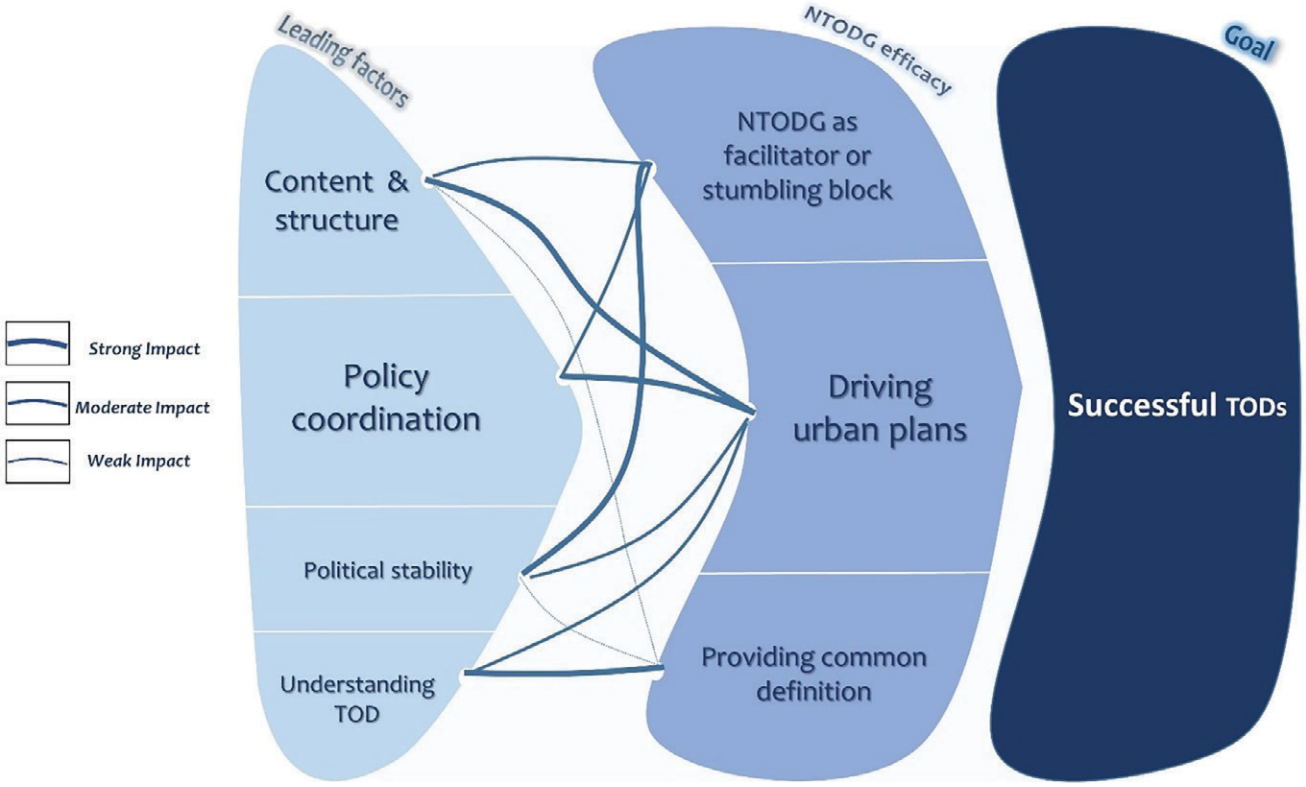

Figure 1. Relationship between the NTODG impacts and leading factors

The analysis above also revealed the interrelationships between the impacts and leading factors behind the success of the NTODG. Figure 1 illustrates this through: (1) sizing the factors proportionally to their significance, based on the total number of times each factor was mentioned by interviewees, and (2) depicting a three-level internal connection – strong, moderate, and weak impacts.

The results indicate that the NTODG can effectively guide urban plans only if it aligns externally with other planning policies and upper-level decisions and, internally, provides a well-structured guideline with sufficient implementation tools and guarantees. Second, a national TOD policy like the NTODG can act as a facilitator for other plans when supported by a stable system – even if regularly updated – that builds on previous knowledge and experiences. Without such support, these policies, like their predecessors, risk being archived and unimplemented. On this point, PR5 highlighted the frequency with which planning policies and regulations remain unimplemented, often due to a lack of political will.

CONCLUDING REMARKS

The present study was designed to examine the impact of national TOD policies on achieving TOD goals, based on the recent experience of Iran's National TOD Guideline. Interviews with local TOD experts revealed that an NTODG can influence the success of TOD projects in three ways: by acting as a facilitator or a barrier, by being a driver for urban plans, and by providing a common definition. However, its effectiveness is influenced by four key factors: the structure and content of the NTODG, policy coordination, political stability, and comprehensive awareness.

To summarize, barriers to successful TOD implementation often stem from the lack of interconnected and integrated tools designed to address both upper- and lower-level policies and strategies. Additionally, there is a mismatch and disagreement between policymakers and local governments regarding the definition and implementation process of TOD. In this context, top-down planning originates from the central government (e.g., the Ministry of Road and Urban

Development), while bottom-up initiatives are driven by municipalities, which often prioritize profit-making through land use changes and the allocation of higher densities. This creates a contradiction in goals: the central government focuses on public benefits, whereas local authorities seek financial gains. As a result, there is a misalignment between the objectives of national policies and the projects or plans pursued at the local level. An effective TOD framework should seek solutions at both macro and micro levels. The development of national guidelines is a crucial first step, but it must be complemented by local-level instructions and tools.

The concept of TOD is inherently complex and tends to resist being confined to a strict framework. As a result, it is often defined based on the goals, intentions, and even interests of individual organizations. Policymakers working at the macro level strive to formulate it as a national policy that governs urban and transportation planning. At the same time, local-level authorities primarily focus on its application as a micro-level design tool. In complex and unstable planning environments, profit-driven motives – such as land speculation and the allocation of higher densities – can lead to the misuse of this utopian concept, transforming it into a dystopia. This risk applies to any planning concept initially developed to promote equity and social justice but later co-opted by real estate developers.

Changing priorities and inconsistencies within the upper-level management system are significant factors affecting the achievement of TOD goals. When the overarching vision is unstable and influenced by the personal preferences of managers, it becomes difficult to establish a mutual understanding and develop shared goals. The creation of national guidelines is an essential first step, but it is not the final solution. Macro- and micro-level institutions and authorities must collaborate to build a mutual understanding and reach a win-win solution that also serves the public good. TOD is not merely a concept for reorganizing the built environment; it also introduces a new perspective on cities and communities. As such, it seeks to transform the urban environment and the normative values of authorities.

In summary, the findings of this study support the idea that NTODGs are among the "efficient" instruments available to governments for advancing TOD culture – particularly in the context of developing countries as newcomers to TOD, where the integration of transport and land use faces numerous challenges. However, NTODGs tend to be "insufficient" on their own, as they must be coordinated with other related policies under a "stable" political system and planning framework to effectively contribute to turning TOD goals into reality.

The present study was limited to a mono-method approach (i.e., a qualitative method), a single case study, and a small number of participants. Therefore, to enhance the generalizability of the study's findings, what is now needed is a cross-national study (i.e., involving those experienced in national TOD policies) to capture diverse contextual experiences. Additionally, the study could be replicated by engaging diverse municipal stakeholders at lower levels, supported by focus groups, to uncover the challenges and successes of TOD implementation in relation to national TOD policies.

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