

# Considerations for Mixed-Use Development

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Construction managers have not typically been involved in the planning of a mixed-use project; however, with project delivery methods becoming increasingly more integrated from the early planning stages, this could change. Even if not involved in these earlier stages, it is important for construction managers to understand the challenges faced to identify risk levels on a project. While the benefits of mixed-use projects are making them a popular choice in area revitalization and new construction, there are still many challenges to successful implementation. This paper analyzes existing research related to these challenges and other considerations that affect the choices of uses in a mixed-use development, such as zoning policies, social environment, economic climate, and design considerations. Factors are unique to a city, even a specific community, and must be identified and weighed in the project planning phase to have the most success and profit for all parties involved.

**Keywords:** Mixed-use, Planning, Risk, Construction Management

## Introduction

In the past, construction managers (CM) have not been a part of the planning process of mixed-use development; however project delivery methods have become increasingly integrated from the earliest stages. To analyze risk, regardless of delivery method, it is important for a CM to understand the challenges and considerations in planning mixed-use development in order to ensure a successful, profitable project for all involved. The Urban Land Institute (1987) defines mixed-use development as containing “three or more functionally and physically integrated revenue-producing uses” (as cited in Grant, 2002, p.73). Mixed-use development has evolved from Traditional Neighborhood Development (TND) and Transit Oriented Development (TOD). According to Grant (2002), TND encourages intensified residential uses specifically located over other uses, low-rise town center, and zoning which allows people to work from home. TOD is developed in nodes around transit stations. The highest density mix of commercial, office, entertainment, and residential are closest to the station, while lower density residential development is further away, but within a 5-minute walk of the station. Grant further states that urban infill and redevelopment is best suited by TOD and new suburban development sites is best suited by TND.

The separation of functions per zoning started after the Industrial Revolution, where development was mixed and pollution was rampant due to the advancements in coal burning without the knowledge of its effects. Separating functions by area helped to alleviate the severe pollution in residential areas, while also creating social divide by race and class. In 1916, New York developed the first extensive zoning code in the United States (Hirt, 2012). While this system is still in place in several cities, many cities are attempting to change their zoning to encourage mixed-use. In the 1960's, Jane Jacob's wrote the book *The Death and Life of the Great American Cities*, critiquing traditional zoning and planning while promoting what is now known as mixed-use development. Proponents of mixed-use list several advantages:

- Mix creates an urban environment active at all hours, making optimum use of infrastructure.

- Smaller, post-baby-boom households can have a greater range of options (rather than just detached homes).
- Mixing housing types could increase affordability and equity by reducing the premium that exclusive, segregated areas enjoy.
- By providing housing near commercial and civic activities, planners could reduce the dependence of the elderly and children on cars.
- Enabling people to live near places where they can shop, work, or play could reduce car ownership and vehicle trips, increase pedestrian and transit use, and thus alleviate the environmental consequences associated with automobile use (Grant, 2002, pp.72-73; Tong & Wong, 1997).

Hoppenbrouwer & Louw (2005) add that reducing the need for travel is one the main reasons for promoting mixed-use development, followed by increasing diversity and vitality. The community should also help to bolster resident career development through incubating jobs and careers and reducing workplace-residence separation (Kong, Sui, Tong, & Wang, 2015). All of this leading to create a more cohesive, thriving community for everyone. These benefits are making mixed-use development a popular choice in area revitalization, sustainability, and new construction.

In a 2004 survey of developers by Levine and Inam, it was discovered that 42.7% of respondents felt that regulations was the single most significant challenge to mixed-use development, followed by neighborhood opposition, insufficient market interest, and financing (p. 420). This paper will discuss these variables including initial considerations, zoning social environment, economic climate, and design considerations. Each of these factors are unique to a city, even a specific community, and must be identified and weighed in the project planning phase in order to choose the best uses within the development to have the most success. This brief literature review initially considered only research performed within the last 15 years and was peer-reviewed, additionally utilizing seminal work referenced by these authors. In order to review data analyzing more than one specific project, individual case studies were not considered. Several articles were reviewed, however the literature that was chosen for this paper was based on breadth of topics covered. Finally, and most importantly, this review is a first step to identify further research needs.

## **Literature Review**

### ***Initial Considerations***

When planning for mixed-use, throwing together three uses within in a building does not equate to success. Even utilizing best practices does not guarantee success: context, cultural priorities, and lifestyle must be taken into account (Moore, 2013). For example, European cities take into account multiple interwoven factors such as market, culture, geography, and history (Hirt, 2012). Without these factors taken into consideration, mixed-use development fails; which can help explain why mixed-use development thrives in one city, but fails in another. As Kong, Sui, Tong, & Wang (2015) point out, “different urban forms generally lead to different urban performance... However, previous experiences in many parts of the world have shown that cities have different performance even with the similar urban form characterized by compact and mixed-use” (p.102).

Grant (2002) states that there are three conceptual levels for mixing use: increasing the intensity of land uses, increasing the diversity of uses, and integrating segregated uses. Niemira (2007) defines intensity of land use as the variety of choices of an explicit type of use; for example developing residential areas that meet multiple socio-economic classes or retail areas with multiple types. A diversity of uses should not conflict with one another, rather should complement each other and produce synergy within the community. Integrating segregated uses helps to overcome traditional zoning by mixing uses that normally would not be close (Grant, 2002). Table 1 provides specific considerations when planning mixed-use developments. The various settings and locations described give

more credence to the fact that the same urban form will not be successful in another development; yet can be adaptable as needed, provided the proper planning is performed. This also shows that that mixed-use development can occur on several different scales and can intertwine together in various environments.

A critical analysis should be performed to determine the best approach to incorporate the proper setting, location, and timing. The type of uses planned for the development should be carefully considered as some have a direct effect on public life, while others do not. For example retailers interact with the public while a parking lot does not (Rowley, 1996). Further, the social and economic dynamics within the community will greatly affect the success of the development. With all of these factors to consider, developing a successful mixed-use project can prove to be difficult.

Table 1

*Considerations when planning mixed-use developments*

<b>Considerations</b>	<b>Options</b>
Settings	Districts or Neighborhoods Street or Other Public Spaces Building or Street Blocks Individual Buildings
Locations	City or Town Centers Inner-City or Brownland Suburban or Edge of Town Locations Greenfield Locations
Approaches	Conservation of established mixed-use settings Gradual revitalization and incremental restructuring of existing parts of towns, including infill development and reuse, conversion and refurbishment Comprehensive development or redevelopment or larger areas and sites
Time	Varying schedules and reasons Space sharing for activities

*Note* Adapted from “Mixed-use Development: Ambiguous concept, simplistic analysis and wishful thinking?” by A. Rowley, 1996, *Planning Practice and Research*, 11(1), 85–98.

## **Zoning**

Other countries have been more successful implementing multi-use development than the United States. This is partially due to cultural differences, but also different zoning practices. The zoning system in the United States vastly differs from that in other developed countries, specifically Europe. One of the major differences is that U.S. zoning is used as a type of land-use control over private property, where other countries utilize a more proactive approach to zoning, planning and partnering with the private sector for development (Hirt, 2012). In the U.S., the project’s risks, revenues, plan, and all development aspects are the placed on private developers, another uncommon practice throughout Europe (Heurkens & Hobma, 2014). Very rarely has the U.S. public sector partnered financially with the private sector in planning and executing an urban project, let alone a mixed-use project. In fact, many developers believe that mixed-use projects would be more successful if the public sector were more involved (Niemira, 2007). Furthermore, as Hirt (2012) points out, in the U.S. there is a guarantee to be allowed to build if all rules are followed; however, in the UK this is not the case. Granting construction is based on each specific case,

following the urban plan and all other considerations, such as market and usage class. In the UK, special permission is needed if a developer wants to change use with a space. The UK seems to have a better understanding of how uses complement each other and the importance of congruency and planning.

Beyond differing approaches to zoning, many scholars find that city planners in North America do not have a proper social understanding of the community when it comes to mixed-use development. Grant (2002) interviewed several planners in North America and found that those in slow-growing communities doubt the benefit of mixed-use development. Instead, they believe that existing neighborhoods need support and that people choose the suburbs for, among other benefits, the separation from other uses. Rowley (1996) suggests that some planners make uninformed assumptions about the community's wants and needs. Further, they underestimate the implications of these assumptions. On the other hand, Brewer & Grant (2015) suggest some planners promote density as a way to increase services within the community; however, their execution is lacking. The thought is that increased density leads to lower housing costs and better support of mixed-use; yet actual population conditions do not meet population projects. Thus, residents and businesses do not receive the anticipated benefits associated with mixed-use development.

While zoning strategies differ, no matter the location, developers and planners see different sides of the same coin when it comes to mixed-use development, each having their own opinion, motivation, and decisions on the subject. A survey of planners and developers by Grant & Perrott (2011) showed these differences. Occasionally, developers and planners share the same views on mixed-use projects, but generally, planners anticipated mixed-use lifestyles to be unavoidable, but developers anticipated resistance and felt the associated policy and regulations would actually detract natural growth. For example, Brewer & Grant (2015) found that existing policies assign density caps, when an area is anticipated for mixed-use development, this cap can hinder the possibility for land use changes. As a result, Levine & Inam (2004) found that over 50% developers propose higher than planned densities in order to have a bargaining chip with planners during the review process. Additionally, there is pressure for planners to allow big-box development. While planners try to resist, developers see the urban mixed-use areas are not focused on retail, but services, hurting mid-sized businesses (Grant & Perrott, 2011). Further, Grant & Perrott (2011) stated:

[Planners] rarely spoke of economic returns or business viability. They showed little knowledge of the spatial geography of contemporary retail development. They favored social meeting spaces like cafés as retail anchors. They viewed the failure of particular businesses as temporary setbacks in an inevitable and necessary urban transformation.

[Developers] carefully gauged market demand and cultural behavior. Developers monitored their economic returns to determine which projects to put forward for approval and to lobby local government for changes in policy when necessary. They saw the long-term economic viability of retail uses as affected by social dynamics: especially consumer behavior, entrepreneurial activities and corporate practices (p. 191).

Indeed, the focus differs depending on which part of the project in which one is working, however they both have to work together in order to complete the project. These competing views can further complicate an already complex project before the first hammer is swung.

Based on case studies of thriving mixed-use projects, there are some guidelines to successful mixed-use development. Lau, Giridharan, & Ganesan (2005) found that no single use should comprise more than 2/3 of the gross floor area of the total project. In Toronto, city planners created a goal of one job for 1.5 residents (Grant, 2002). Koch (2004) suggests reserving the ground level for the most attractive retailers in order to get people in the door. In a review of multiple mixed-use developments in Hong Kong, the most dense city in the world at 2500 people per hectare, Lau et al. (2005) found that successful mixed-development projects:

- have compact spaces, vertical separation of uses, and in general community facilities at close proximity;
- their households appear to accept ... designs largely due to convenience and cost effectiveness;
- projects have at least five uses to support the life style and economic activity of the residents;
- the residential developments account for more than 30% ... but no single use is above 65% of the [gross floor area];
- the residents of the selected projects consider the designs efficient in terms of daylight, yet designers of these projects appear to have mastered the art of efficient and elegant design of upper level pedestrian connectivity and the [base of building] (p. 544).

Grant & Perrott (2011) offer that both proper location and timing lead to success as well. Locations with more traffic tend to have a higher success rate with mixed-use development. Sufficient population is needed in order to support the increased development. This may require timed phasing of the build-out and leasing or sales in order to build the population enough to support various uses. Generally speaking, mixed-use development should provide variety, vitality, and viability (Lau et al., 2005) to a community. However, because of the extensive variables that affect a community, a critical analysis should first be completed to determine the best way to address the unique social, economic, and environmental factors.

### ***Social Factors***

There are several social variables that impact the success of mixed-use development. While people enjoy the conveniences that mixed-use development offer, some do not want the entire package. For example, uses such as “group homes, day care centers, waste management facilities, high-density housing, halfway houses, or prisons typically encounter resistance from residents. Even parks and playgrounds sometimes met opposition” (Grant, 2002, p.73). Brewer & Grant (2015) point out that attempts to increase population densities and mix are affected by household dynamics. For instance, families prefer homes with gardens, that allow privacy for peace and quiet, offer some separation, and provide community-focused amenities (Rowley, 1996). For a long time, the American dream included a home in the suburbs with a white picket fence and living among people who are nearly the exact same, which goes against urban mixed-used development. However, even in 1996, Rowley notes that social networks are only partly shaped by the home locality, mostly dependent on personal mobility, “convenience, choice, and price” are the main factors of determining shopping. Technology since then, such as the internet, hand-held devices, and social media, has developed strong social networks that are not even in the same state. At the same time, mobile applications such as Uber rideshares have made it easier to live without a car, making urban living even more accessible. These cultural variables can differ in intensity from area to area, making research even more indispensable for planning. Determining the best use of space to attract the most people is integral to mixed-use development.

Large cities such as Toronto and Vancouver which have a high influx of immigration have higher growth rates and more diverse populations where successful mixed-use developments flourish. Unfortunately, smaller cities without a significant population influx do not have as prosperous downtown revitalization (Grant, 2002). Indeed, a developer that can accurately phase a mixed-use project based on population and market circumstances has an advantage and a better chance at successful development (Brewer & Grant, 2015). However, the current rate and diversity of the population is not within the developer's control, yet the developer must adapt their construction plan to the current situation.

Another detail to keep in mind is the economic effect of new construction on the community. With the added cost of new construction compared to that of an already existing building, typically only people and organizations with

more money and profits can afford the new spaces (Rowley, 1996) resulting in gentrification, a new style of class-based spatial segregation (Grant, 2002). As such, one of the goals in mixed-use development is to avoid social segregation and promote diversity throughout the community. Providing various types, and thus costs, of housing will help to prevent gentrification.

### *Economic Climate*

Although mixed-use develop can help to diffuse economic risk across the variation of uses, there are several economic risks which can detract developers from attempting innovative mixed-use projects (Grant, 2002). As Grant & Perrott (2011) point out, construction costs for these projects are higher than single-use construction, however they do not generate a sales premium (Grant & Perrott, 2011). During an interview, a principal from Elkus/Manfredi Architects, LTD stated that mixed-use projects can cost as much as 70% more than in an average suburb (Koch, 2004). Furthermore, a survey by Niemira (2007) revealed that almost 2/3 of respondents agreed that mixed-use projects have a longer construction time than that of separate components. The longer a construction project lasts, the more expensive it becomes as day to day overhead expenses accrue and cannot be recovered. Furthermore, investors see mixed-use projects as less prosperous than single-use ones that consequently have a lower exchange value (Rowley, 1996).

However, there are variables which, when present, further increase the chance of success, specifically economic success. Financial returns have the capability to be higher in more dense neighborhoods as they provide more drivers of change and opportunities to accept a mixed-use project. However, smaller cities can lack these drivers of change created from high levels of population influx. Thus in these cities, more research should be performed to determine the proper economic, market, and political conditions to accept a mixed-use development (Brewer & Grant, 2015). Niemira's (2007) survey results, suggests that there are three major factors for financial success: "1) having a major draw – employers, an academic institution, an entertainment facility; 2) developing the project as part of a master-planned site; and 3) having an urban location" (pp. 55-56). Being aware of the unique economic environment in which the project will be constructed will only help to increase the chances of making the development more profitable and attract more investors.

### *Building Design*

In addition to the comprehensive pre-construction planning process and challenges, there are challenges during design phases as well. All construction must comply with local building codes, however with mixed-use development, each use may be subject to a different code which can slow production and add cost. Additionally, each use requires its own support system; for example, it is necessary for a restaurant to have an isolated exhaust system from the rest of the building, and retailers do not want apartment plumbing pipes visible in their space (Koch, 2004). For each use, building codes require different fire suppression methods, and in a mixed-use these can become even more stringent (Rowley, 1996) due to the mixture and higher density. Furthermore, structural safety can become challenging as well. Retail space is more open and expansive than residential or office spaces. Typically retail is on the ground floor for easy access to shoppers, thus the ceiling of this space must be designed to support the above load. As retailers prefer to have minimal columns in order to maximize space and have unobstructed views, a support beam must be utilized. This is very expensive as it requires engineered support beams and more material for construction (Koch, 2004).

The first multi-organizational mixed-use conference was held in 2006 and conference participants suggested four main challenges: trash, odor, parking and security (Niemira, 2007). Each use must be able to collect trash in a manner that does not intrude on the other uses and then dispose of in a discrete manner. Odors can come from mismanaged trash and other operations, such as cooking in a restaurant. Parking can become a problem for residents when a busy

retailer has driving shoppers instead of local walkers. Finally, security can become an issue if all of the use within a building use the same entrance and residential space has public access. While designing an entire development can be challenging, addressing these and other detailed issues within a single building can create even more hurdles. When deciding to accept a project, these factors cannot be overlooked as they add cost and time to projects.

## **Discussion**

A case study by Grant (2002) of McKenzie Towne main-street area in Calgary, Alberta reveals what a struggling mixed-use development looks like in the early years:

[The developer] has invested millions of dollars in commercial structures that it cannot sell; instead, it leases the properties but faces high vacancy rates. The neighborhood commercial property on the square is largely empty. A private school proposed to move into the building but faced resident opposition and backed out. The developer cancelled plans for apartments above stores in the town center because market rents would not cover building costs; apartments over garages on the alleys suffered the same fate. [Developer] representatives found that builders had trouble selling high-end homes where mixing housing types was greatest (p. 76).

Calgary, as a smaller city without significant population growth was not ready for this revitalization effort. Although the main-street area is more successful now, it took a severe economic hit in the beginning and several years to build up. Proper market research and planning was not completed or barely completed before the development to determine the best use of the space for this area.

If the developer or owner is not successful such as in the case described above, payments and schedule may be delayed, scope may be reduced, or payment may not occur at all, creating cash-flow difficulties for the CM and complications in moving on to more projects. Although a CM's role in the planning process is non-existent in a traditional design-bid-build delivery method, before bidding such a project an analysis can help establish the level of risk. Determining the support of the project can help determine success: making note of the setting, location, approach, and uses of the building, specifically if there are already tenants interested or committed to the project. While general support may be higher if the project is within an existing mixed-use area, it is vital to ascertain if the new uses are compatible or competing with the existing community. The building design and zoning are important components, particularly when multiple uses are in one building. In addition to ensuring that the location is properly zoned, zoning requirements can change between or even within floors. This may add cost and time to project, thus allocating for this within the bid is crucial to completing a profitable project for the CM. In the design-build or negotiated delivery method, the same factors should be analyzed as in the design-bid-build; however the CM has more influence on the approach before drawings are finalized.

## **Recommendations**

Although not included in this literature review, there are numerous cases studies and research across the world on mixed-use development. However, most of this addresses the planning process, not necessarily how to overcome unavoidable challenges. Further research is needed to analyze the roles in the planning process: developers, planners, and construction managers. This research should analyze the challenges viewed by each role, identify how they differ, and look for ways in which collaboration will help to overcome challenges. There have been attempts to further identify challenges: interviews of both planners and developers in Canada to identify the respective differing views (Grant, 2002), ranking the challenges by significance (Levine and Inam, 2004), and bringing disciplines together to identify challenges (Niemira, 2007). However, this research does not primarily include construction managers, is relatively outdated, from outside of the United States, or generally does not discuss how to

interdisciplinary cooperation can overcome these challenges. Better understanding the cause of challenges and motivation for each role will alleviate any miscommunication and bolster relationships in order to complete a successful project.

### References

- Brewer, K., & Grant, J. L. (2015). Seeking density and mix in the suburbs: Challenges for mid-sized cities. *Planning Theory & Practice*, 16(2), 151–168. <http://doi.org/10.1080/14649357.2015.1011216>
- Grant, J. (2002). Mixed use in theory and practice: Canadian experience with implementing a planning principle. *Journal of the American Planning Association*, 68(1), 71–84. <http://doi.org/10.1080/01944360208977192>
- Grant, J., & Perrott, K. (2011). Where is the café? The challenge of making retail uses viable in mixed-use suburban developments. *Urban Studies (Edinburgh, Scotland)*, 48(1), 177–195. <http://doi.org/10.1177/0042098009360232>
- Heurkens, E., & Hobma, F. (2014). Private sector-led urban development projects: Comparative insights from planning practices in the Netherlands and the UK. *Planning Practice & Research*, 29(August 2015), 1–20. <http://doi.org/10.1080/02697459.2014.932196>
- Hirt, S. (2012). Mixed use by default: How the Europeans (don't) zone. *Journal of Planning Literature*, 27(4), 375–393. <http://doi.org/10.1177/0885412212451029>
- Hoppenbrouwer, E., & Louw, E. (2005). Mixed-use development: Theory and practice in Amsterdam's Eastern Docklands. *European Planning Studies*, 13(7), 967–983. <http://doi.org/10.1080/09654310500242048>
- Koch, D. (2004). Looking up. *Retail Traffic*, 33(12), 38–40, 42–43.
- Kong, H., Sui, D. Z., Tong, X., & Wang, X. (2015). Paths to mixed-use development: A case study of Southern Changping in Beijing, China. *Cities*, 44, 94–103. <http://doi.org/10.1016/j.cities.2015.01.003>
- Lau, S. S. Y., Giridharan, R., & Ganesan, S. (2005). Multiple and intensive land use: Case studies in Hong Kong. *Habitat International*, 29(3), 527–546. <http://doi.org/10.1016/j.habitatint.2004.04.007>
- Levine, J., & Inam, A. (2004). The market for transportation-land use integration: Do developers want smarter growth than regulations allow? *Transportation*, 31(4), 409–427. <http://doi.org/10.1023/B:PORT.0000037086.33893.9f>
- Moore, S. (2013). What's wrong with best practice? Questioning the typification of new urbanism. *Urban Studies*, 50(11), 2371–2387. <http://doi.org/10.1177/0042098013478231>
- Niemira, M. P. (2007). The concept and drivers of mixed-use development: Insights from a cross-organizational membership survey. *Research Review*, 4(1), 54.
- Rowley, A. (1996). Mixed-use development: Ambiguous concept, simplistic analysis and wishful thinking? *Planning Practice and Research*, 11(1), 85–98. <http://doi.org/10.1080/02697459650036477>