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Research Article

Minute-Economics: A Novel Granular Approach To Analyzing Scale And Profitability For Nascent And Bootstrapped F&B Startups

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ABSTRACT

This paper introduces "Minute-Economics," a novel analytical approach for assessing the viability and scalability of nascent and bootstrapped food and beverage (F&B) startups. By examining business operations, costs, and revenues on a minute-by-minute basis, this method offers micro-level insights that traditional business planning often overlooks. The study applies Minute-Economics to Euphoria Beverages, a startup by the authors, aiming to provide premium beverages at affordable prices. Through customer flow analysis, granular financial modelling, and scalability scenarios, the research reveals critical insights about profit margins, break-even points, and growth challenges. The findings demonstrate the potential of Minute- Economics to transform decision-making processes, resource allocation, and strategic planning for early-stage ventures, particularly those operating with limited resources and narrow margins. This paper contributes to the field of business economics by offering a scalable and detailed analytical tool that can be adapted to various industries, paving the way for more precise and actionable business insights. While developed for F&B startups, the methodology shows promise for broader application across various industries and business models.

Keywords: Minute-Economics, F&B startups, bootstrapping, scalability, business analysis, entrepreneurship, microeconomics

1 Introduction

In today's dynamic entrepreneurial world, nascent and bootstrapped F&B firms confront particular hurdles in determining their potential for size and profitability. Traditional business planning methods frequently fall short of providing the detailed information required for these early-stage ventures to make sound decisions. This paper introduces "Minute-Economics," a new analytical approach that provides micro-level insights into a startup's economic viability and development potential. It is a novel analytical approach coined by the authors after their experience of founding and running Euphoria Beverages and key insights that they derived from it. This approach examines a business's operations, costs, and revenues on a minute-by-minute basis. This granular analysis provides deep insights into a startup's growth potential, offering a new perspective on business planning and decision-making. By focusing on the smallest practicable unit of time, the minute, this approach enables a thorough assessment of revenue creation, cost structures, and profitability. This granularity is especially important for bootstrapped firms with limited resources and small margins for error. The genesis of this concept stems from the authors' real-world experience with Euphoria Beverages a startup dedicated to transforming the beverage market by providing premium products at affordable rates. During the process of creating and testing a Minimum Viable Product (MVP), the entrepreneurs came into the

important question of scaling. Addressing this difficulty led to the discovery of Minute-Economics principles, which provided unanticipated insights into the business model's viability. By introducing Minute-Economics, this study adds to the increasing body of knowledge on startup economics and provides entrepreneurs with a new tool for navigating the important early phases of their businesses. The insights gained from this technique have the ability to greatly influence decision-making processes, resource allocation, and strategic planning for bootstrapped F&B startups. As we go deeper into the complexities of Minute-Economics, we'll look at how this micro-level research might reveal hidden difficulties and opportunities, potentially changing how entrepreneurs approach the core question of business viability and scalability.

2 Literature Survey

The concept of Minute-Economics builds upon several interconnected areas of research in entrepreneurship, financial management, and operational analysis. This review examines key studies that inform and contextualize our approach, focusing on granular business analysis, resource optimization in startups, and innovative analytical methods in the food and beverage (F&B) sector. Financial bootstrapping, a key consideration for nascent F&B startups, has been extensively studied in entrepreneurship literature. Vanacker et al. (2010) conducted a longitudinal study exploring the relationship between financial bootstrapping and new venture growth. Their findings indicate that certain bootstrapping techniques, such as owner financing and customer-related methods, positively correlate with venture growth [1]. This research underscores the potential of resource-maximizing strategies in resource-constrained environments, aligning closely with the principles of Minute- Economics. Building on this, Leatherbee and Katila (2020) examined the effectiveness of the lean startup method for early-stage ventures. Their study on hypothesis-based probing of business ideas and iterative learning resonates with the granular, data-driven approach of Minute-Economics [5]. The lean startup methodology's emphasis on rapid experimentation and adaptation parallels our focus on minute- by-minute analysis for decision-making in nascent F&B startups. In the realm of operational analysis, real-time analytics have gained significant attention. Wolniak (2023) highlighted the benefits and challenges of implementing real-time analytics in business operations. The study emphasized how real- time data enables businesses to quickly identify patterns, optimize processes, and allocate resources efficiently [3].

This work provides a foundation for the minute-by-minute analysis proposed in our Minute-Economics approach, particularly in the context of F&B operations where timing is crucial. The importance of granular analysis in the F&B sector is further emphasized by studies on customer flow and behavioral analysis. Wu et al. (2015) explored advanced methods for analyzing customer behavior in retail environments [10], while Shikov et al. (2021) focused on predicting customer flow based on transactional data [9]. These studies offer valuable insights for the Customer Flow Analysis component of Minute-Economics, highlighting the potential of micro-level data in optimizing F&B operations. In terms of financial analysis, advanced cost accounting techniques have shown promise in service industries. Kont and Jantson (2011) examined the application of Activity-Based Costing (ABC) and Time-Driven Activity-Based Costing (TDABC) in university libraries [11], while Siguenza-Guzman et al. (2013) reviewed the evolution of TDABC systems [12]. Their findings on the benefits and challenges of granular cost analysis inform the financial modelling aspect of Minute-Economics, particularly in understanding the nuanced cost structures of F&B startups. The decision-making processes of entrepreneurs, especially in small and medium-sized enterprises (SMEs), provide crucial context for Minute-Economics. Gibcus and Ivanova (2003) delved into these processes, examining how entrepreneurial traits and external market conditions influence strategic choices [7]. Their work underscores the need for analytical tools that can support rapid, informed decision-making in dynamic startup environments.

It's worth noting that while this literature review focuses on the most directly relevant studies to Minute-Economics, there are additional works in our reference list (specifically references 2, 4, 6, and 8) that provide broader context to our research. These include studies on bootstrapping techniques and new venture emergence [2], a 10-year survey of operations management research [4], an empirical review of lean manufacturing and its strategies [6], and a research overview of operations management [8]. While not directly cited in this review, these works contribute to the broader understanding of the entrepreneurial and operational landscape in which Minute-Economics is situated. Future research could more deeply integrate these perspectives into the Minute-Economics framework.

In conclusion, while these studies have explored various elements of granular business analysis, resource optimization, and startup strategies, there remains a gap in integrating these approaches into a comprehensive, minute-by-minute analytical framework specifically tailored for F&B startups. Minute- Economics aims to fill this gap, offering a novel tool for entrepreneurs to navigate the critical early stages of their ventures in the challenging F&B sector. By synthesizing insights from financial bootstrapping, lean startup methodologies, real-time analytics, customer behavior analysis, and advanced cost accounting, Minute-Economics provides a unique approach to understanding and optimizing F&B startup operations at the most granular level.

3 Research Objectives

1. Define and elaborate on the concept of Minute-Economics.
2. Demonstrate its application through the case study of Euphoria Beverages.
3. Explore the implications of this approach for nascent F&B startups.
4. Discuss how Minute-Economics relates to and builds upon existing economic and business analysis frameworks.
5. Examine the potential broader applications of this methodology across various industries and business models.

4 Methodology

Our Minute Economics concept offers a comprehensive analysis of business processes at the minute level, providing real-time insights into revenue generation, cost incurrence, and profit realization for nascent and bootstrapped F&B startups. This innovative approach comprises three key components: customer flow analysis (CFA), financial modelling, and scalability scenarios. By breaking down operations into minute-by-minute chunks, we can identify inefficiencies, optimize resource allocation, and make data-driven decisions for long-term growth. This granular methodology is particularly valuable in the F&B sector, where margins are often tight and operational efficiency is crucial. To illustrate the principles of Minute-Economics, we'll first explore a hypothetical burger joint scenario, demonstrating how even small improvements in per-minute efficiency can lead to significant gains. This simplified example will set the stage for our real-world case study of Euphoria Beverages, where we'll show how Minute-Economics guided our decision-making and strategic planning, offering practical insights for other F&B entrepreneurs.

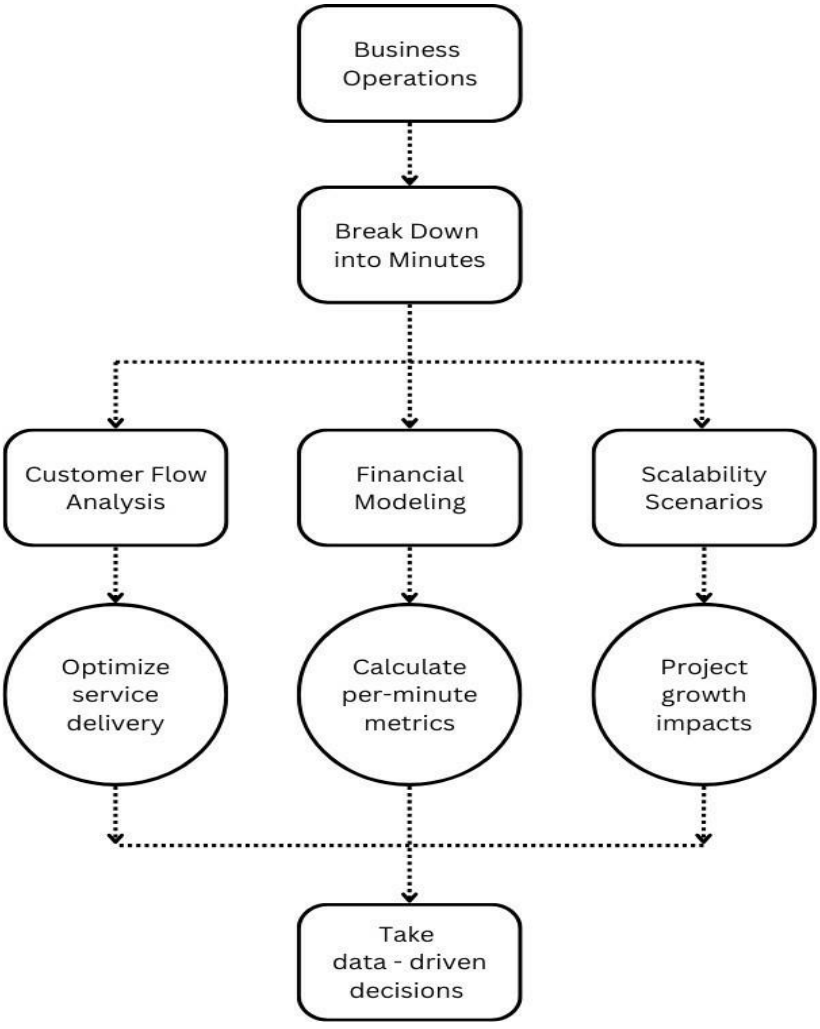

Figure 1: Comprehensive Overview of Minute-Economics Methodology

4.1 Customer Flow Analysis (CFA):

CFA involves studying customer behavior patterns, service times, and operational efficiency. It includes analyzing order processing times, preparation times, and customer arrival patterns to optimize resource allocation and improve service delivery. Let's consider the scenario of a burger joint for better understanding of all these financial concepts.

For a burger joint, we would conduct time-motion studies to understand the entire customer service process, from order placement to food delivery. This analysis would typically include:

- Average time to take an order
- Average time to prepare and assemble a burger
- Average time for payment processing and food handover

Example: Let's say our analysis shows that, on average, it takes 3 minutes to serve one customer from start to finish at the burger joint.

Break-down of the 3-minute service time:

- Order taking: 30 seconds
- Burger preparation (grilling patty, assembling burger): 2 minutes
- Payment and handover: 30 seconds

Capacity Constraints: We would identify bottlenecks in the process:

- Grill capacity: How many patties can be cooked simultaneously?
- Assembly station: How quickly can prepared burgers be assembled and wrapped?
- Payment processing: Is the cashier a bottleneck during rush hours?

This analysis helps in identifying areas for potential improvement. For instance, we might find that adding a second grill could significantly increase throughput during peak hours.

By conducting this detailed Customer Flow Analysis, we can understand the burger joint's operational dynamics and identify opportunities for efficiency improvements and increased profitability on a minute-by-minute basis.

4.2 Financial Modelling:

This section introduces key financial metrics calculated on a per-minute basis, including Minute Revenue, Minute Cost, and Minute Profit. It also covers break-even analysis, capacity utilization, and return on investment, all framed within the context of time. Let us understand all these metrics with their formulae and suitable examples in the context of a burger joint.

a) Minute Revenue (MR) = $p \times q$ (1)

where p is the price per unit and q is units sold per minute.

Example: If a burger costs Rs. 100 and the stand sells 0.75 burgers per minute (3 every 4 minutes)
MR = Rs. 100 × 0.75 = Rs. 75 per minute

b) Minute Cost (MC) = $(FC/m) + (VC \times q)$ (2)

where FC is fixed costs, m is operating minutes, and VC is variable cost per unit.

Example: Let's say daily fixed costs (rent, equipment, etc.) are Rs. 3000, the stand operates for 360 minutes (6 hours), and variable costs (ingredients, packaging) are Rs. 40 per burger: MC = (Rs. 3000/360) + (Rs. 40 × 0.75) = Rs. 8.33 + Rs. 30 = Rs. 38.33 per minute

c) Minute Profit (MP) = MR – MC (3)

Using the above examples: MP = Rs. 75 - Rs. 38.33 = Rs. 36.67 per minute

d) Break-even in Minutes (BEM) = FC / (p - VC) (4)

Example: BEM = Rs. 3000 / (Rs. 100 - Rs. 40) = 50 minutes The burger joint needs to operate for 50 minutes each day to break even.

e) Capacity Utilization Rate (CUR) = $(q/q_{max}) \times 100$ (5)

Example: If maximum capacity is 1 burger per minute, but they're selling 0.75: CUR = (0.75/1) × 100 = 75%

f) Return on Minute (ROM) = $(MP/I) \times 100$ (6)

where I is investment per minute

Example: If they invested Rs. 200,000 and operate 6 hours daily for 30 days:

I per minute = Rs. 200,000 / (360 × 30) = Rs. 18.52 ROM = (Rs. 36.67/Rs. 18.52) × 100 = 198%

4.3 Scalability Scenarios:

Here, we explore various growth scenarios using the Minute Economics framework. This includes projecting the impact of increased customer flow, extended operating hours, or additional resources on minute-by-minute profitability and overall business performance.
For the burger joint, you could explore scenarios such as:

- What if they could increase sales to 1 burger per minute?
- What if they extended operating hours to 8 hours?
- What if they added a second grill to increase capacity?

Each scenario would be analyzed using the above formulas to determine its viability.

5 Case Study: Euphoria Beverages

Having established the principles of Minute Economics using a hypothetical burger joint, we now turn to our real-world application with Euphoria Beverages. Our startup faced similar challenges in understanding profitability and scalability on a minute-by-minute basis.

5.1 Introduction to Euphoria Beverages

In Mumbai's thriving beverage sector, a group of young entrepreneurs (authors) embarked on an ambitious initiative that would not only disrupt business standards but also transform startup analysis. Euphoria Beverages was founded with a single aim in mind: to provide high-quality frappes and coffees at unexpectedly low rates, with a focus on budget-conscious consumers, notably college students. The founders made a huge breakthrough in cost optimization, enabling them to offer their products competitively without sacrificing quality. Initial market tests on university campuses provided enormously good results, including spectacular daily sales statistics that appeared to justify their business strategy. However, as operations progressed, the team saw themselves dealing with razor-thin profit margins despite significant sales volumes. This insight prompted a more in-depth, granular review of their company strategy, with an emphasis on minute-to-minute productivity. During this thorough investigation, the concept of "minute economics" began to emerge. This case study examines how Euphoria Beverages used minute economics principles to evaluate their operations, yielding critical insights about scalability and long-term profitability. Through this perspective, we'll look at how examining a firm at its most basic unit of production - the minute - can reveal key constraints and opportunities that might otherwise go unreported in standard business planning. The Euphoria Beverages experience not only recounts the narrative of a creative product in a competitive industry, but it also demonstrates the birth of a novel approach to startup analysis, which might potentially transform how entrepreneurs and investors evaluate early-stage ventures.
Application of Minute Economics
In applying Minute Economics to Euphoria Beverages, we break down the business operations into their smallest measurable units - minutes. This approach allows for a granular analysis of revenue generation, cost incurrence, and profit realization on a minute-by-minute basis. By examining these micro-level metrics, we can uncover insights about operational efficiency, profitability, and scalability that might be overlooked in traditional business analysis methods**.**

5.1.1 Customer Flow Analysis

Euphoria Beverages operated from 10 AM to 8 PM, providing 10 productive hours daily. While customer influx varied throughout the day, with peaks during lunch breaks, our analysis focuses on maximum throughput scenarios to demonstrate scalability challenges.
Under optimal conditions, the business could produce:

- Normal operations: 0.33 beverages per minute (1 every 3 minutes)
- Maximum capacity: 0.5 beverages per minute (1 every 2 minutes, with two baristas)

5.1.2 Financial Modelling

Using our Minute Economics framework, we analyzed Euphoria Beverages' operations:
a) Minute Revenue (MR) = p × q

At maximum capacity: MR = Rs. 80 × 0.5 = Rs. 40 per minute

b) Minute Cost (MC) = (FC/m) + (VC × q)

Assuming highest daily fixed costs: MC = (Rs. 8,000 / (10 × 60)) + (Rs. 40 × 0.5)
= Rs. 13.33 + Rs. 20 = Rs. 33.33 per minute

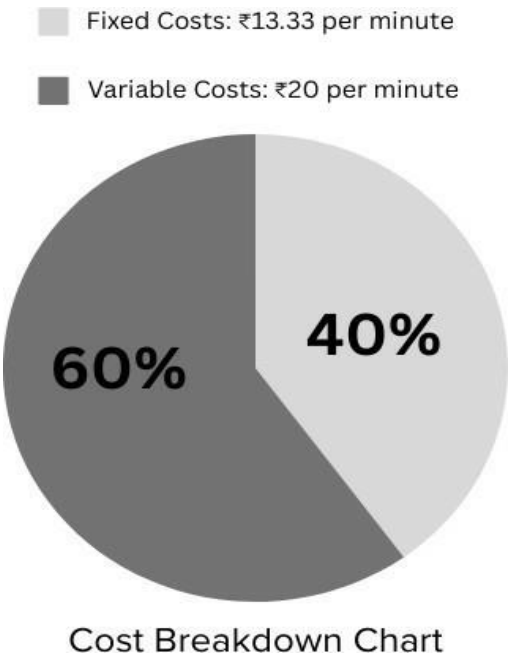

Figure 2: Cost Breakdown Chart – Euphoria Beverages

Minute Profit (MP) = MR - MC
MP = Rs. 40 - Rs. 33.33 = Rs. 6.67 per minute

Figure 3: Financial Metrics – Euphoria Beverages

c) Break-even in Minutes (BEM) = FC / (p - VC)
BEM = Rs. 8,000 / (Rs. 80 - Rs. 40) = 200 minutes or 3.33 hours

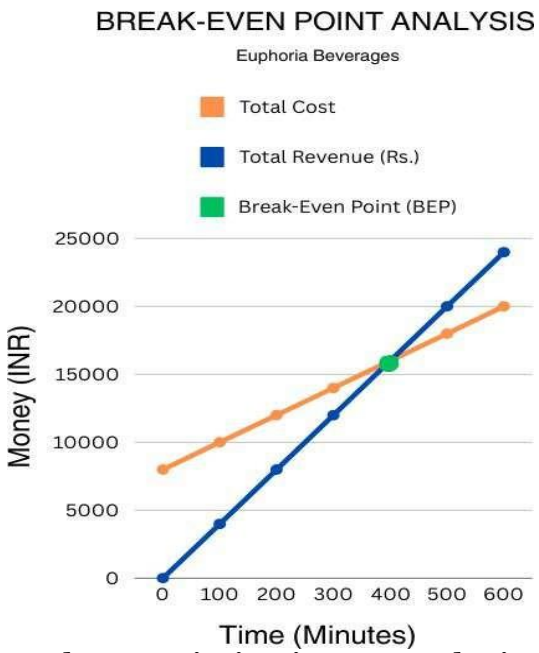

Figure 4: Break-Even Point in Minutes – Euphoria Beverages

Capacity Utilization Rate (CUR) = $(q/q_{max}) \times 100$ During normal operations: CUR = $(0.33/0.5) \times 100 = 66$

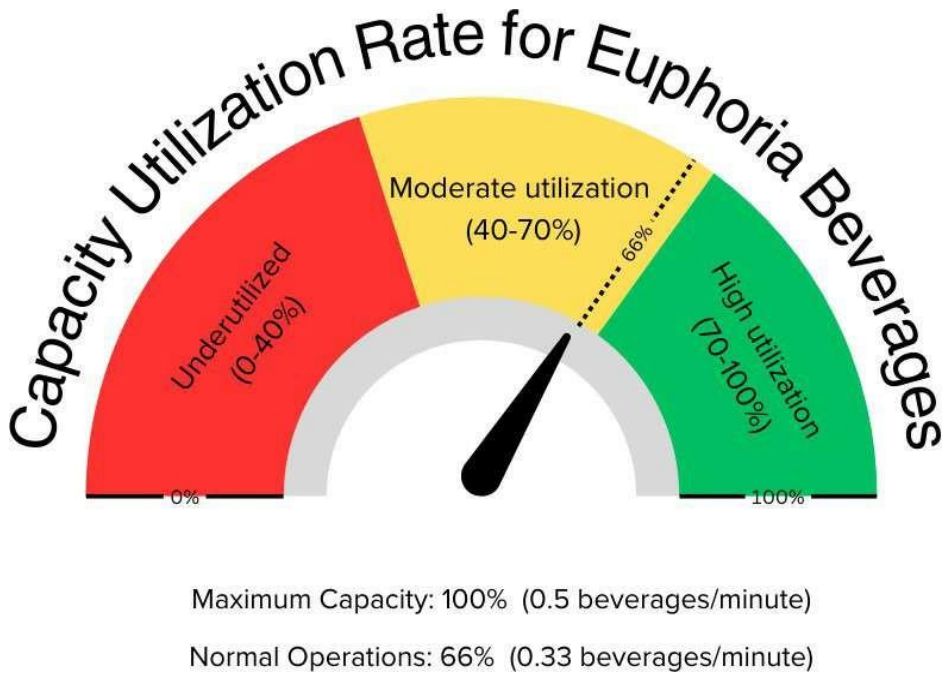

Figure 5: Capacity Utilization Rate (CUR) Analysis – Euphoria Beverages

5.1.3 Scalability Scenarios

Even operating at maximum capacity for all 10 hours, daily profit would be: Rs. 6.67 × 60 × 10 = Rs. 4,002 This modest profit margin, even under optimal conditions, highlighted the significant challenges in scaling the business.

5.2 Results and Insights

The Minute Economics analysis revealed several key insights:

- Tight Profit Margins: Even at maximum capacity, profit per minute was relatively low, limiting funds available for reinvestment and expansion.
- High Break-Even Point: The business needed to operate at high capacity for a significant portion of the day

just to break even.

- Scalability Challenges: The limited profit per minute, even under optimal conditions, made rapid scaling difficult without external funding.

5.3 Capacity Constraints: The labor-intensive nature of fresh beverage production limited the potential to significantly increase output per minute.

The application of Minute Economics to Euphoria Beverages provided crucial insights into the challenges of scaling a bootstrapped startup in the competitive beverage industry. Despite an innovative business model and strong value proposition, the minute-by-minute analysis revealed that achieving profitable scale would be extremely challenging without significant changes to the business model or external investment.

6 Results and Discussion

The application of Minute Economics to Euphoria Beverages revealed critical insights into the challenges faced by nascent and bootstrapped F&B startups. The granular analysis of operations on a minute-by-minute basis uncovered several key findings that traditional business analysis might have overlooked.

First, the study emphasized how small-scale food and beverage businesses may struggle with narrow profit margins. Euphoria Beverages' profit per minute was a pitiful 16.7% even at full capacity (that is, Rs. 6.67 on an expenditure of Rs. 40). In order to contextualize this, let us examine a hypothetical situation in which a firm that is comparable to ours, called "Smoothie Paradise," makes a little larger profit of Rs. 10 per minute. Smoothie Paradise would earn Rs. 6,000 and Euphoria Rs. 4,002 in profit over a 10-hour workday. This seemingly insignificant difference of Rs. 3.33 per minute adds up to a considerable Rs. 1,998 every day, demonstrating how minute-level research can identify meaningful gaps in profitability. Furthermore, Minute Economics' high break-even point (3.33 hours at maximum capacity) highlights the financial pressure on new F&B ventures. This discovery is very important for business owners who are developing their business plans. For example, a firm called "Bubble operation Tea Bonanza" may reevaluate their pricing plan or look for methods to cut fixed costs if they learn through Minute Economics that they must run at maximum capacity for five hours in order to break even. Possibly the most important finding is the analysis's revelation of the scalability issues. Even under ideal circumstances, the minutely limited profit makes quick scaling without outside capital challenging. This realization could revolutionize the way entrepreneurs design their businesses. Assume that "Vegan Delights," a startup, uses Minute Economics to forecast its growth. Even after a year in business, they may discover that their per-minute profit barely permits the opening of one new location annually.

7 Conclusion and Future Scope

The Minute Economics methodology has proven to be an effective instrument for evaluating the feasibility and expandability of fledgling and self-funded food and beverage enterprises. This approach gives business owners a previously unheard-of level of clarity on the advantages and disadvantages of their business models by dissecting operations into the smallest quantifiable parts. The Euphoria Beverages case study serves as an example of how Minute Economics can highlight important details that conventional business planning may miss. It emphasizes how crucial it is to comprehend the minute-by-minute economics that underpin a company's potential for growth and profitability as well as its daily and monthly financial statements.

In terms of the future, Minute Economics has far more potential than only the food and beverage industry. This strategy could be modified across a range of sectors, especially those with low-margin, high-volume business methods. For example, Minute Economics can be used by a clothes store in the retail industry to analyze sales per minute at different times of the day in order to improve personnel numbers. Using this technique, a vehicle wash company in the service sector might maximize throughput without sacrificing quality by figuring out the best time for their cleaning procedure.

Especially intriguing is the possibility of combining Minute Economics with cutting-edge technologies. It may be possible to create machine learning algorithms that analyze data in real time and deliver quick insights about profitability per minute. To optimize profitability on a minute-by-minute basis, a food delivery company, for instance, may leverage AI-powered Minute Economics to dynamically modify delivery costs based on real-time demand and driver availability. But it's crucial to strike a balance between Minute Economics' idealistic promise and its real-world uses. Although this strategy offers useful granular insights, it is important to weigh them against other considerations including long-term strategic goals, customer happiness, and market trends. Furthermore, very small enterprises with little resources may find it difficult to do such a deep examination.

8 References

1. Vanacker, Tom & Manigart, Sophie & Meuleman, Miguel & Sels, Luc. (2010). A Longitudinal Study on the Relationship Between Financial Bootstrapping and New Venture Growth. Entrepreneurship and Regional Development. 23. 10.1080/08985626.2010.502250.

2. Bootstrapping Techniques and New Venture Emergence. Unpublished manuscript
3. Wolniak, Radosław. (2023). Functioning of real-time analytics in business. Scientific Papers of Silesian University of Technology Organization and Management Series. 2023. 10.29119/1641-3466.2023.172.40.
4. Sheikh-Zadeh, Alireza. (2012). Operations Management Research: a 10-Year Survey.
5. Leatherbee, Michael & Katila, Riitta. (2020). The lean startup method: Early-stage teams and hypothesis-based probing of business ideas. Strategic Entrepreneurship Journal. 14. 10.1002/sej.1373.
6. Chahal, Virender & Narwal, M.S.. (2017). An empirical review of lean manufacturing and their strategies. Management Science Letters. 7. 321-336. 10.5267/j.msl.2017.4.004.
7. Gibcus, Petra & Ivanova, Elissaveta. (2003). The decision-making entrepreneur; Literature review. EIM Business and Policy Research, Scales Research Reports.
8. Lewis, Michael. (2019). Operations Management: A Research Overview. 10.4324/9781351034982.
9. Shikov, Egor & Bardina, Mariia & Vaganov, Danila. (2021). Predicting customer flow for the selected location based on transactional data. Procedia Computer Science. 193. 361-370. 10.1016/j.procs.2021.10.037.
10. Wu, Yeh-kuang & Wang, Hui-Chun & Chang, Liang-Chun & Chou, Shih-Chun. (2015). Customer's Flow Analysis in Physical Retail Store. Procedia Manufacturing. 3. 3506-3513. 10.1016/j.promfg.2015.07.672.
11. Kont, K.-R., & Jantson, S. (2011). Activity-Based Costing (ABC) and Time-Driven Activity- Based Costing (TDABC): Applicable Methods for University Libraries?. *Evidence Based Library and Information Practice*, *6*(4), 107–119. 10.18438/B8GG8Z
12. Siguenza-Guzman, Lorena & Abbeele, Alexandra & Vandewalle, Joos & Verhaaren, Henri & Cattrysse, Dirk. (2013). Recent Evolutions in Costing Systems: A Literature Review of Time- Driven Activity-Based Costing. The Review of Business and Economic Literature(ReBEL). 58. 34-64.