



Firman Noor Hasan <firman.noorhasan@uhamka.ac.id>

[Edumatic] Editor Decision

1 message

e-journal@hamzanwadi.ac.id <e-journal@hamzanwadi.ac.id>

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Reply-To: Reyhan Achmad Rizal <reyhanachmadrizal11@gmail.com>

To: Afifah Aulia Rahman <afifahaulia6859@gmail.com>, Firman Noor Hasan <firman.noorhasan@uhamka.ac.id>

Afifah Aulia Rahman, Firman Noor Hasan:

We have reached a decision regarding your submission to Edumatic: Jurnal Pendidikan Informatika, "Consumer Purchasing Pattern Analysis Using the FP-Growth Algorithm for Inventory Availability in MSMEs".

Our decision is: Revisions Required

REVIEWER A

Emphasize the novelty in the title, not just the method used. Include more specific scientific results or objectives, such as inventory optimization, decision support, stock replenishment, or association rule-based inventory planning.

Title

So the title is suggested to be: FP Growth Based Consumer Purchase Patterns for Inventory Optimization in Perishable MSME Supply Chains

- Add a brief research gap at the beginning of the abstract so that the urgency of the study can be understood from the start.
- State the novelty explicitly, not just by mentioning the use of the FP-Growth algorithm.

- Include key information about the dataset, such as the number of transactions, the data period, and the characteristics of the research objects.

Abstract

- Present more substantial results, for example the most significant association rules along with their implications for inventory optimization or decision-making.
- Explain the research contributions to method development, data-driven decision-making, or the application of association rule mining in managing perishable products.
- End the abstract with scientific contributions and practical implications, not just by stating that the algorithm works well.

Introduction

- Strengthen the contextual background by explaining the scientific challenges in managing perishable product inventory, not just the importance of transaction data analysis.
- Turn the literature review from just a summary of studies into a critical literature review that compares approaches, results, limitations, and opportunities for developing previous research.
- Build the scientific gap more sharply. Specifically explain aspects that previous research hasn't answered yet, such as the stability of association rules with historical data, the quality of association rules for seasonal transactions, or the limitations of implementing FP-Growth in inventory decision support.
- Align the novelty with the research content. Avoid claims about a new framework if the research doesn't truly develop a new model, method, or analytical framework.
- Add a theoretical contribution explaining how the research expands the use of association rule mining in the context of inventory management for perishable products.

- Include a practical contribution showing how the research results can support decisions on restocking, product bundling, inventory prioritization, or data-driven stock management.
- End the Introduction with a paragraph that explicitly explains: the research gap, the research objective, the novelty, the scientific contribution, and the practical implication.

Explain the characteristics of the dataset in more detail, including the number of transactions, the data collection period, the number of product types, and the reason for choosing the dataset as a representation of consumer purchasing patterns.

Provide a scientific justification for selecting the minimum support and minimum confidence values, including supporting references or the results of parameter exploration on the research dataset.

Describe each preprocessing stage in detail, including data cleaning procedures, handling of missing or inconsistent data, attribute selection, and the transformation process into a transaction format ready to be processed by FP-Growth. Add an explanation about the FP-Tree formation process and the mechanism of generating association rules so that the method is not only operational but also explains the algorithmic logic used.

Complete the information about the experimental environment, like the RapidMiner version, hardware specifications, and implementation setup to support the reproducibility of the research.

Method

Consider adding a parameter sensitivity analysis or a comparison with other association algorithms so that the advantages of using FP-Growth in the research case can be proven empirically, not just based on literature.

Add a more detailed methodology flowchart showing the input, processes at each KDD stage, and the output generated at each step so that the research flow becomes easier to understand.

Overall: The Methods section needs to be strengthened by providing methodological justification for all research decisions, clarifying dataset characteristics, explaining the selection of algorithm parameters, and improving reproducibility through a more detailed description of the implementation. Moreover, the method would have higher scientific value if it included parameter validation, sensitivity analysis, or comparisons with other association methods, so that the research contribution is not just the implementation of FP-Growth, but also provides empirical evidence of the effectiveness of the approach used.

Results

Focus the Results section on presenting scientific findings, not just showing algorithm outputs.

Provide information on the number of frequent itemsets, the number of association rules generated, and the number of rules that meet the final criteria so that the quality of the results can be evaluated more comprehensively.

Explain why certain association rules are selected as the main findings of the study and how these rules contribute to inventory optimization.

Add visualizations of the results, such as an association network, product relationship graph, or co-occurrence heatmap, to make association patterns easier to understand.

Include an analysis of the implications of each association rule for restocking decisions, product bundling, inventory prioritization, and stock allocation.

Evaluate the benefits of your research results, for example through stock management simulations or analyzing the potential reduction of stock-outs and overstock, so that the practical contribution can be proven quantitatively.

Add a comparison of your results with previous studies or other algorithms to show the position and strengths of your findings.

Present a summary of the main findings at the end of the results section so that readers get a clear picture of the empirical contribution of the research before moving on to the discussion.

It's recommended to strengthen the analysis of the quality of association rules, add empirical validation regarding the benefits of the results for inventory management, and complete the presentation with visualizations and discussions showing how the research findings provide added value compared to previous studies.

Reduce repetition of research results and focus the discussion on scientific interpretation regarding the reasons behind the discovered association patterns.

Strengthen the theoretical discussion by explaining how the research findings support, expand, or provide new perspectives on the literature of association rule mining, market basket analysis, and inventory analytics.

Conduct a critical comparison with previous studies, not just highlighting similar results but also discussing the differences, causal factors, and their scientific implications.

Explain the impact of perishable product characteristics on the formation of purchasing patterns so that the discussion is more contextual and has higher scientific value.

Emphasize the scientific contribution of the research, for example, how the use of association rules can support the development of data-driven inventory decision support for SMEs handling horticultural products.

Discussion

Expand the practical implications by explaining how the results can be implemented in restocking policies, product bundling, warehouse management, reducing food waste, and supply chain planning.

Add a discussion on methodological limitations, including the dataset size, the study being limited to a single SME, and potential biases from using certain FP-Growth parameters.

Wrap up the discussion with recommendations for future research directions, such as integrating FP-Growth with demand forecasting methods, time-series analysis, or machine learning to build a more adaptive and predictive inventory system.

Conclusion

Reaffirm the novelty and scientific contribution of the research, not just stating that FP-Growth was successfully applied.

Explain how the research findings enrich the literature on association rule mining for inventory management of perishable products or in the context of SMEs.

Add more specific practical implications, for example, using association rules in restocking policy planning, inventory prioritization, product bundling, or reducing food waste.

Strengthen recommendations for future research by suggesting the integration of FP-Growth with demand forecasting methods, time-series analysis, or machine learning to build a more adaptive and predictive inventory decision support system.

Avoid repeating information already explained in the results and discussion sections; focus the conclusion on the main scientific messages and research contributions.

Add references on the latest developments in:

Association Rule Mining;
Frequent Pattern Mining;
Retail Analytics;
Inventory Optimization;
Supply Chain Analytics;
Data-Driven Decision Support Systems.

References

Don't just cite research that uses FP-Growth, but also include studies discussing the limitations of FP-Growth, algorithm developments, or alternative approaches like ECLAT, Apriori Improvement, Closed Frequent Pattern Mining, or Sequential Pattern Mining. This will strengthen the methodological argument of the research.

Include references that discuss perishable inventory management, inventory analytics, and demand forecasting, so the connection between the FP-Growth algorithm and inventory issues has a stronger theoretical basis.

Increase citations from international articles published in the last 5 years (2022–2026) to show that the research follows the latest developments in the field of data mining and business intelligence.

REVIEWER B

Title

The term "MSMEs" is too general. Use phrases like "Perishable Goods" or "Fresh Food Retail." The fact that fruits and vegetables spoil quickly is the main focus of your research, not the business scale.

For example:
Mitigating Overstock and Shortages in Fresh Produce Retail Through FP-Growth Based Association Rules

Abstract

You should remove vague claims like 'above 80%' and directly show the strongest insights, for example the rule 'Shallot and Orange → Chili' which has a confidence of 100% and a lift ratio of 1.493. As for keywords, replace general phrases like consumer purchasing patterns and Knowledge Discovery in Databases with more precise terms that match global trends, such as Market Basket Analysis, Perishable Goods, and Inventory Optimization. Finally, make sure to fix the critical contradiction in the methods section that states the minimum support threshold is 85%, while your table data shows the rules that pass are in the 18%–30% range.

Keyword:

FP-Growth, Market Basket Analysis, Inventory Optimization, Perishable Goods, Association Rules.

Introduction

Your claim of studying 'temporal data bias' (time- or season-based bias) is really contradictory given that your dataset only has 100 rows. A dataset of 100 transactions usually covers just a few days, or at most 1-2 weeks of sales. You can't claim to tackle 'temporal bias' or 'long-term consumer behavior changes' if the data is that small. You should revise this claim to make it more realistic, or honestly explain the limitations of the data in the introduction as a specific challenge for local SMEs with limited data.

In paragraph 2, you suddenly insert a citation that jumps far from the topic of fruits/vegetables: '...including mining 10 million blockchain address categories... And analyzing more than 8,000 Solid-State Drive (SSD) error records...'

Revision Suggestion: This citation about blockchain and SSD feels really forced just to show that the FP-Growth algorithm is popular. Q1 journals prefer a more focused (funneling) approach. Focus this paragraph on the computational efficiency of FP-Growth in handling similar retail products or food supply chains, not on blockchain technology that isn't relevant to fruit and vegetable management.

Research Gap Has Not Been Strongly Shown. You stated: '...Literature reviews in the last five years show a large research gap, as the majority of existing studies only use short-term data covering transactions over one month... To address these methodological limitations, this study aims to fill the identified scientific gap by analyzing transaction data over a longer and more diverse historical period.' This statement is risky if your own draft only uses 100 transactions. 100 transactions are not data that reflect a 'longer and more diverse historical period.' Revise your research gap formulation. Instead of focusing on 'long data duration,' focus on the combination of characteristics of perishable fresh food commodities at the traditional SME scale, which have not optimized layout or digital stock planning.

You have explained well the comparison between FP-Growth and Apriori (paragraph 2) regarding memory and speed. However, you haven't explained why memory efficiency is important for your research subject (Induk Buah & Sayur - IBS).

Suggestion: Add 1-2 sentences connecting the advantages of the algorithm with on-the-ground conditions. For example: since IBS stores are still using limited Microsoft Excel records, applying a memory-efficient algorithm without candidate generation like FP-Growth becomes very crucial so that the system can later be integrated with low-scale computing (such as standard MSME laptops) without burdening daily operations.

The research goals and contributions/novelty offered are realistic (don't claim long-term if the data only has 100 transactions).

Connect the text consistency with the steps in Figure 1.

Data Collection and Characteristics (Explain the details of 100 transactions, the timeframe of data collection, and the profile of the IBS business unit).

Method

Data Preprocessing and Transformation (The process of cleaning data from Excel and converting it into a binary matrix).

Algorithmic Parameter Setting (Write the actual values of minimum support and confidence that are mathematically logical, not 85%).

Results

Present the Graph: Show a visualization graph of the association rules from RapidMiner.

Parameter Justification: Provide experimental evidence for determining the threshold values.

Tidy the Table: Simplify the language in the table using arrow notation or separate columns.

In Table 3,
Add a small table or line graph showing your experiment in determining the best threshold. For example, show the algorithm's performance when:
Min. Support = 5% → How many rules are generated?

Min. Support = 10% → How many rules are generated?

Min. Support = 20% → How many rules are generated?

Exploring visualization features in RapidMiner. Insert an FP-Tree Graph image or an Association Rules Network Graph (a circle/dot graph showing the strength of relationships between commodities).

Synthesize the results with the biological characteristics of the commodities (Fresh Produce Analysis). Connect the data findings with industry realities. For example, your strongest rule is Shallot and Orange → Chili (100% confidence) as well as the combination of Potato, Tomato, Chili, and Shallot. Scientifically, explain that these items are basic spice components and staple vegetables in the local culinary culture, which have a very high turnover rate.

Discussion

Sharpen the Comparison with Previous Studies. Don't just look for similarities, but also seek out differences or deeper confirmations. Compare your lift ratio and confidence results with FP-Growth research in modern retail. Show scientific reasoning: does consumer shopping behavior in traditional market MSMEs (like IBS) have more densely clustered item proximity patterns compared to modern supermarkets? Confront your data with the citations you used in the Introduction.

Acknowledge and discuss the research limitations scientifically.

Present your contributions, both theoretically and practically.

Conclusion

Bagian Conclusion harus berfokus pada penghapusan pengulangan teori dasar dan langsung menonjolkan esensi konklusi berbasis data dari kasus yang Anda teliti. Alih-alih hanya mengklaim bahwa metode ini efektif, Anda harus menegaskan bahwa algoritma FP-Growth berhasil mengidentifikasi kluster komoditas bumbu pokok (Shallot-Orange-Chili) dengan tingkat asosiasi deterministik mencapai confidence 100%. Temuan ini memberikan kontribusi praktis yang nyata, yaitu mengubah kebijakan pengadaan inventori UMKM yang awalnya parsial menjadi strategi pemesanan yang tersinkronisasi (synchronized replenishment) demi meminimalkan risiko pembusukan barang. Terakhir, tajamkan rekomendasi riset masa depan secara lebih teknis; alih-alih menyarankan metode forecasting biasa, arahkan peneliti selanjutnya untuk mengintegrasikan pola asosiasi ini dengan pelacakan masa simpan biologis (shelf-life) komoditas ritel secara real-time

References

At least 80% of your references should come from reputable international journal articles (high Scopus/SJR) that discuss the FP-Growth algorithm and fresh food supply chains in the last 5 years.

Universitas Hamzanwadi mendukung Program Pemerintah Provinsi Nusa Tenggara Barat dalam penanganan sampah di Pulau Lombok. Universitas melalui program Campus Zero Waste menghimbau bapak ibu tidak mencetak email dan lampiran dalam email ini.

UNIVERSITAS HAMZANWADI

Jln. TGKH. Muhammad Zainuddin Abdul Madjid No 132 Pancor Selong, Lombok Timur, NTB 83612

Telpon : 0376 22954

Website : <http://hamzanwadi.ac.id>

Email : universitas@hamzanwadi.ac.id



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