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Customer Segmentation and Loyalty Strategies: Applications of Business Analytics in Retail and Hospitality

Customer Segmentation and Loyalty Strategies: Business Analytics Applications in Retail and Hospitality

Customer segmentation and loyalty strategies: business analysis applications in minority commerce and hostelry

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Summary

This article analyzes how Business Analytics techniques can support customer segmentation and loyalty in small and medium-sized businesses in the retail, hospitality, restaurant, and local service sectors. The research adopts a qualitative, descriptive, and theoretical-applied approach, grounded in international literature on business intelligence, customer analytics, RFM, CLV, K-Means clustering, and loyalty programs. It argues that transactional data, POS systems, registrations, and purchase histories can guide more precise business decisions without requiring complex technological structures. It concludes that data-driven loyalty strengthens the consumer experience and competitiveness, provided it respects privacy, transparency, and the responsible use of information.

Keywords: Business Analytics; customer segmentation; customer analytics; loyalty; K-Means clustering; retail; hospitality; LGPD (Brazilian General Data Protection Law).

Abstract

This article analyzes how Business Analytics techniques can support customer segmentation and loyalty strategies in small and medium-sized businesses in retail, hospitality, restaurants, and local services. The study adopts a qualitative, descriptive, and theoretically grounded approach, drawing on the international literature on business intelligence, customer analytics, RFM, CLV, K-Means clustering, and loyalty programs. It argues that transactional data, POS systems, customer databases, and purchase histories can support more precise commercial decisions without requiring complex technological structures. The article concludes that data-driven loyalty strengthens the customer experience and competitiveness, providing that privacy, transparency, and responsible use of information are properly observed.

Keywords: Business Analytics; customer segmentation; customer analytics; loyalty; K-Means clustering; retail; hospitality; data protection.

1. Introduction

Competition in retail, hospitality, and local services is no longer determined solely by...

by location, price, or product variety. In markets where margins are

Under pressure, consumers compare experiences in real time and tolerance for failure.

It decreases; understanding consumption patterns has become a crucial managerial skill.

Small and medium-sized businesses, historically guided by intuition, personal relationships and

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Through direct observation, they began operating in an environment where each sale generates records.
potentially useful for future decisions.
Point-of-sale systems, payment platforms, customer registration, reservations, applications.
Delivery logs, loyalty programs, and operational spreadsheets gather information about
Frequency, average ticket price, categories purchased, purchase times, response to promotions.
seasonality and preferences. These records, when processed systematically, allow
Identify customer segments, assess retention, anticipate churn, personalize offers and...
measuring the return on commercial actions. The central challenge, therefore, does not lie in simply possessing
not only in data, but also in converting that data into understandable, actionable, and cost-effective decisions.
relevant.

Business Analytics provides a methodological basis for this transformation. Its contribution
It lies in the combination of data, analytical methods, and managerial interpretation, in order to reduce the
reliance on purely intuitive decisions. Chen, Chiang, and Storey (2012) situate Business
Intelligence and Analytics as a field focused on generating organizational impact through
structured and unstructured data, web analytics, data mining, visualization, and systems.
decision support. Although this development has been driven by large volumes of
Information, and its implications, are not limited to large corporations. Smaller businesses also benefit.
They also participate in this movement by using POS systems, registrations, digital payment methods and...
Customer history to guide your business decisions.

In this scenario, customer segmentation takes on a strategic role. Markets are not
homogeneous; consumers vary in terms of frequency of use, price sensitivity, amount spent,
consumption occasion, category preference, service expectations, and response to benefits.
Treating everyone the same way can lead to commercial waste: discounts offered to those who
I would buy without incentive, irrelevant campaigns for high-value clients, excessive messaging.
for occasional consumers or benefits incapable of altering behavior. Segmentation
Based on data, it allows for the replacement of generic actions with differentiated retention strategies.
Reactivation, personalization, and relationship development.

In the cosmetics retail sector, for example, repeat purchases can be associated with the product usage cycle.
products, brand preference, the search for new releases, promotional purchases, or
Kit composition. In restaurants, the return may vary depending on the day of the week, the time, the
occasion of consumption, the category of the dish, the consumption of beverages, commemorative dates or the
prior experience. In hospitality, segmentation can distinguish corporate guests,
Leisure tourists, families, repeat customers, price-sensitive consumers, and audiences that
They value convenience or exclusivity. In all these contexts, building loyalty depends less on the customer.

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It's more about repeating standardized offers and recognizing relevant differences.
International marketing and customer analytics literature demonstrates that techniques such as RFM,
Customer lifetime value, clustering, and campaign response models enhance management.
relationship. Fader, Hardie and Lee (2005) show that RFM analysis — recency, frequency and
monetary value — can be connected to the estimation of the client's future value, preventing that
The company treats purchase history merely as a record of the past. Bombaij and Dekimpe
(2020), when examining loyalty programs in European retailers, demonstrate that such
Programs do not produce uniform effects: their results depend on the design of the benefit, the
Retailer strategy, operational format, and competitive environment.
This article analyzes how Business Analytics techniques can support customer segmentation and
the structuring of loyalty strategies in small and medium-sized retail businesses, of
Hospitality, restaurants, and local services. The research is qualitative and descriptive in nature.
and theoretical-applied, based on international literature and a managerial approach focused on
Smaller-scale commercial operations. The technical approach includes customer analytics.
Behavioral segmentation, RFM, CLV, K-Means clustering, loyalty programs.
Customer experience, retention metrics, and ethical boundaries in the use of personal data.

2. Theoretical Framework

2.1 Business Analytics and decision intelligence applied to the customer

Business Analytics can be understood as the systematic use of data, statistical methods,
Computational models and managerial interpretation to support organizational decisions. The literature
It distinguishes different levels of analytical maturity. Descriptive analysis organizes historical records.
and allows one to understand what occurred. Diagnostic analysis investigates causes, deviations, and relationships.
Predictive analytics estimates future behaviors, such as demand, abandonment, return, or response to...
campaigns. Prescriptive planning guides alternative courses of action, indicating which decisions are likely to produce
better results under certain conditions.
Chen, Chiang, and Storey (2012) describe the evolution of Business Intelligence and Analytics in
stages that start from structured bases, data warehousing, reports and traditional systems of
decision support, they move towards data originating from the web and digital interactions, and achieve
Mobile environments, real-time data, and analytics linked to contextual behavior. This
This trajectory demonstrates that the value of Business Analytics lies not only in its technical capabilities.
not only in storing information, but also in the ability to transform it into knowledge useful for action.

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In small businesses, this logic must be understood proportionally. A well-organized spreadsheet...
An organized POS system can be more useful than a poorly maintained, sophisticated platform.
When explored beyond the daily cash register closing, it reveals patterns of time, product, and...
Combinations of items, average ticket price, and frequency. Similarly, simple registrations, starting from
Consistent data allows you to identify recurring, inactive, promotional, or high-value customers.
The decisive factor is not the size of the technological infrastructure, but the discipline of recording, the
The quality of the variables and the ability to interpret them.
Akter et al. (2016) highlight that analytical capabilities generate performance when aligned with
business strategy. This observation is relevant because data analysis should not be a business strategy.
parallel activity, not merely technical. In retail and hospitality, customer data
They need to engage in dialogue regarding inventory, customer service, communication, pricing, and training.
The team and the design of benefits. Without this integration, the analysis loses operational strength.
Provost and Fawcett (2013) reinforce that the usefulness of data science depends on its formulation.
Correct solution to the business problem. Before choosing algorithms, it is necessary to define the decision that will be made.
Does it intend to improve? Do you want to identify customers at risk of churn? Do you want to stimulate the second [service]?
Purchase? Increase average order value? Reduce reliance on discounts? Personalize recommendations?
Each objective demands distinct variables, metrics, and methods. In local businesses, this clarity is crucial.
It avoids the superficial use of analytical tools and directs efforts towards measurable results.

2.2 Customer analytics, CRM and behavioral segmentation

Customer analytics refers to the application of analytical methods to understand, classify, and predict.
and guide interactions with customers. The approach shifts the focus from aggregate revenue to
Individual or segmented behavior. Instead of just looking at total sales volume,
The company then begins to examine who buys, how often, in which category, and for what amount.
At what point, under what stimulus, and with what probability of return?
Ngai, Xiu and Chau (2009), when reviewing data mining applications in customer relationship management,
management identifies four recurring dimensions: identification, attraction, retention and
Customer development. Identification allows for the recognition of consumer profiles; attraction.
It guides acquisition efforts; retention seeks to reduce churn; development seeks
Expand value throughout the relationship. These dimensions are interdependent. A campaign
A loyalty program can attract customers without generating retention; a loyalty program can increase membership without...
increase margins; a personalized offer can improve the average order value and, at the same time,
It could undermine trust if perceived as invasive.

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Kumar and Reinartz (2018) advocate a value-driven view of CRM, in which the
Relationships and profitability must be considered together. This perspective prevents
Loyalty programs shouldn't be confused with unlimited benefits. Not every customer...
Recurring revenue is necessarily profitable; not every high-ticket customer has a low cost of service.
Customer service; not every promotional buyer represents long-term potential.
Analytics allows us to qualify these distinctions and better guide the allocation of business resources.
Customer segmentation is based precisely on the premise that consumers exhibit...
Relevant differences for managerial decision-making. Wedel and Kamakura (2000) define segmentation.
as a process of identifying groups that are internally similar and externally distinct,
capable of guiding marketing actions. Kotler and Keller (2016) add that effective segments
They must be measurable, accessible, substantial, differentiable, and actionable. Without these criteria, the
Segmentation is reduced to abstract classification, without practical use.
Although demographic, geographic, and psychographic criteria are still important, loyalty...
requires special attention to the observed behavior. Two consumers with similar income.
Customers in the same age group may exhibit opposite purchasing patterns.
Different price sensitivities. Consumers located in the same region may differ.
Regarding convenience, the occasion of consumption, and preference for experience. Therefore, the
Behavioral segmentation — based on frequency, recency, monetary value, categories
Consumption rates, response to campaigns, and retention within the user base—tends to offer greater engagement with
Relationship decisions.

2.3 RFM, CLV and the economic value of the relationship

RFM analysis is one of the most accessible tools for behavioral segmentation. The model
It uses three dimensions: recency, frequency, and monetary value. Recency indicates how long ago the
The customer made their last purchase. Frequency measures the number of purchases in a defined period.
The monetary value represents the expenditure associated with the customer. The combination of these dimensions allows
Identify active, recurring, inactive, promising, occasional, or high-value customers.
Fader, Hardie, and Lee (2005) demonstrate that RFM analysis can be linked to customer lifetime.
value, shifting the focus from the past to the expected future value for the customer. This contribution is
This is relevant because many management models treat purchase history like a photograph.
Static. Two customers with similar historical values may have distinct future potentials.
A consumer who has recently made a purchase and is making increasing purchases tends to have value.
distinct from one whose spending was high in the past, but whose low recency indicates a decline.

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The connection between RFM and CLV allows the company to allocate resources more rationally. Clients
High recency, high frequency, and good monetary value can justify retention and...
Recognition. Consumers with a good consumption history, but low recency, may be...
included in reactivation strategies. Recent, still infrequent, clients should receive
Incentives for strengthening the bond. Low-margin groups, including recurring ones.
They require caution in granting benefits.
Rust, Lemon, and Zeithaml (2004) associate the return on marketing with the management of assets.
customers, reinforcing that relationship decisions should consider future economic value.
This perspective is especially relevant for small businesses, where resources are limited.
Promotional offers are limited. Offering benefits without measuring the impact can compromise the...
margin. On the other hand, ignoring customers with high potential for repeat business means losing value.
long term.
There's no need to start with complex probabilistic models. A managerial version of CLV.
You can combine the average ticket price, the estimated margin, the annual frequency, and the probability of retention.
Even simple approximations allow for comparing segments and defining priorities. The sophistication
The latter may include cohorts, survival models, churn probability, or estimates.
Bayesian approaches are acceptable, provided the behavioral basis is sufficient.

2.4 K-Means clustering and unsupervised clustering

While RFM classifies customers based on three main dimensions, K-Means allows
incorporating multiple variables. MacQueen (1967) formalized the method as a technique of
partitioning observations into groups defined by proximity to centroids. Jain (2010),
By reviewing five decades of studies on clustering, it demonstrates the technique's enduring relevance.
Pattern recognition, in data mining and exploratory analysis.
In customer segmentation, each consumer can be represented by variables such as frequency,
Average ticket price, total value, recency, categories purchased, discount usage, purchase channel, time of day.
predominant and estimated margin. The algorithm seeks to form groups with the smallest internal distance and
greater degree of differentiation between them. Its usefulness lies in revealing groupings that may not
to appear in manual cuts.
Despite its popularity, the method requires caution. Monetary variables on a large scale.
Outliers can dominate cluster formation if not standardized.
centroids and distort interpretations. The choice of the number of groups should combine criteria
Technical methods, such as the elbow method and the silhouette coefficient, with managerial validation. In

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Local operations, three or four well-interpreted segments, tend to generate more value than
excessively fragmented classifications.
The interpretative stage determines the usefulness of the model. A grouping without managerial translation.
This does not alter the decisions. After the formation of the clusters, it is necessary to describe the profiles and estimate the...
Value, define the risks, and associate actions. A group of recurring customers with moderate ticket prices can...
Receive cross-selling incentives. Seasonal premium consumers can be approached on specific dates.
Strategic. Promotional buyers demand margin control. High-value inactives.
Historical data may justify a revival campaign. New players with potential demand...
communication for the second purchase.

2.5 Loyalty programs: design, strategy and context

Loyalty programs are relationship management tools, but their effects are not...
automatic. Berman (2006) notes that effective programs depend on a clear design,
Ease of use, perceived benefit, and alignment with business objectives. The simple
The existence of points or rewards does not guarantee retention; nor does it ensure profitability.
Poorly designed programs can reward customers who would buy anyway, attracting
Opportunistic consumers, reducing margins or generating administrative costs without return.
proportional.
Reinartz and Kumar (2002) warn against the mismanagement of loyalty by demonstrating that loyal customers do not...
They are always the most profitable. This finding is relevant because many businesses confuse
Recurring value. A consumer may buy frequently only during promotions.
or require a high service cost. Another might buy less often, but with a ticket.
Larger customer base, higher margins, and less need for incentives. Customer loyalty requires segmentation.
economic and behavioral.
Bombaij and Dekimpe (2020), in a study with 358 food retailers in 27 European countries,
Studies show that loyalty programs tend to produce positive effects, but this depends on several factors.
of design, strategy, and context. The study indicates that immediate rewards tend to be more
Effective than deferred rewards, multivendor programs can have more impact.
negative aspects, and performance varies depending on the retail format, pricing strategy, and environment.
competitive. This evidence reinforces the need to avoid standardized programs.
The choice of benefit should consider the margin, frequency, and experience. Discounts are easy.
They can be effective in communicating, but they can lead the customer to make impulse purchases. Giveaways can generate...
Perceived value without directly reducing the price. Recognition benefits, such as

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Priority, personalization, or early access may be more suitable for premium segments.
Frequency-based rewards work best when the frequency is consistent with the cycle of...
consumption.

In the cosmetics retail sector, programs can combine points, scheduled replenishment, and profile-based kits.
and access to new releases. In restaurants, this may involve per-visit benefits, experiences in
Specific dates, pairing offers, priority booking, or invitations to events. In
Hospitality services may include conditional upgrades, preference recognition, and benefits.
loyalty. Each design needs to be tested with indicators of repurchase, frequency, and average order value.
Average, margin, retention per cohort, benefit utilization, and reactivation.

2.6 Customer experience, personalization and ethical boundaries

The consumer experience is not limited to the moment of purchase. Lemon and Verhoef (2016)
They describe the customer journey as a process that encompasses multiple touchpoints before,
during and after the transaction. Verhoef et al. (2009) point out that experience results from elements
such as the service environment, social interaction, price, brand, communication, and experiences.
previous and situational factors. In restaurants and hospitality, reservations, reception,
Customer service, waiting time, atmosphere, product, payment, after-sales service, and public reviews.
They make up an integrated experience.
Business Analytics helps personalize this journey. A restaurant can recognize
recurring preferences, suggest coherent combinations, anticipate return dates, or adjust the
Communication tailored to the occasion of consumption. A cosmetics retailer can advise on restocking,
recommend complementary products and identify consumers interested in new releases.
Local services can differentiate recurring maintenance customers from those who require...
Occasional assistance. In all cases, personalization should feel like service, not surveillance.
The LGPD establishes principles such as purpose, adequacy, necessity, transparency, and security.
prevention, non-discrimination and accountability (BRAZIL, 2018). The European GDPR consolidated
similar international standards regarding lawful treatment, minimization, and protection of
personal data (EUROPEAN UNION, 2016). The ANPD, when regulating data processing agents...
small-scale operations recognize the operational specificities of these businesses, without neglecting their duties.
proportional security and governance (ANPD, 2022).
From this perspective, loyalty programs should inform users what data is collected and for what purpose.
purpose. The business should avoid excessive data collection, restrict internal access, and protect
the registrations, review the technology providers, and allow customers to understand the use of

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your information. Segmentation should not be used to unfairly discriminate or embarrass.
consumers or induce harmful consumption. Legitimate personalization increases relevance and
It improves the experience; abusive personalization exploits information asymmetries.

3. Methodology

The research is qualitative, descriptive, and theoretical-applied in nature. The qualitative approach
This is justified by the critical analysis of concepts, methods, and managerial implications related to
Customer segmentation and loyalty programs in smaller businesses. The descriptive nature stems from...
from the systematization of techniques such as RFM, CLV, K-Means clustering, retention metrics and
Loyalty programs. The theoretical-applied dimension is manifested in the construction of a model.
A concept focused on the realities of retail, restaurants, hospitality, and local services.
The methodological procedure combines a narrative review of the international literature and a proposition.
Analytical approach for managerial application. Academic contributions in Business were prioritized.
Intelligence and Analytics, customer analytics, CRM, market segmentation, RFM, customer
Lifetime value, clustering, customer experience, and loyalty programs. Chen's articles,
Chiang and Storey (2012), Fader, Hardie and Lee (2005) and Bombaij and Dekimpe (2020) constitute the
core theoretical framework, complemented by studies in marketing analytics, CRM, and experience.
of the consumer.

The conceptual modeling starts from a typical situation: a small or medium-sized business with records.
Transactional data is available, even if dispersed. POS systems are considered data sources,
Customer records, purchase history, reservations, order slips, product records, spreadsheets.
Operational and financial reporting. The proposal does not require extensive technological infrastructure.
The starting point is the basic organization of the customer database, with identification, transaction date,
Value, category consumed, channel, frequency, and relationship information.
The analytical process comprises six stages. First, consolidation and cleaning of the database, with removal
Regarding duplicates, standardization of identifiers, and temporal organization of transactions. Second,
Selecting variables aligned with the business objective, avoiding an excess of irrelevant data.
Third, calculation of recency, frequency, monetary value, average ticket, and margin indicators.
Estimated value, preferred category, and loyalty program membership. Fourth: conceptual application of
Segmentation via RFM and, when a sufficient database is available, K-Means clustering.
Fifth, translating the segments into loyalty strategies. Sixth, defining metrics for...
monitoring, such as repurchase rate, cohort retention, benefit redemption, reactivation of
Inactive accounts and margin variation.

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The applied approach engages with professional experiences in cosmetics retail and operations.
of restaurants, especially in loyalty program practices, in the use of POS systems, in
Analysis of customer behavior and segmentation. No proprietary data was used.
identifiable or real transactional transactions. The discussion remains at a theoretical-applied level, with
analytical and managerial purpose.

4. Analysis and Discussion

4.1 From business intuition to evidence-driven segmentation

Local businesses have always depended on proximity to the customer. This proximity, although
Valuable, it becomes insufficient when the operation grows, there are multiple employees, or when...
Business decisions need to be evaluated using metrics. The owner's memory can...
It identifies some recurring customers, but it's difficult to measure variations in ticket size, margin,
Responding to promotions, seasonality, or the risk of churn. The transition from intuition to analysis.
It does not eliminate practical knowledge; on the contrary, it organizes it and tests its adherence to the data.
Undifferentiated commercial management starts from a simplification: it assumes that consumers
They respond similarly to the same incentives. This premise is rarely confirmed. In
In restaurants, executive lunch customers seek convenience, predictability, and adequate time;
Dinner diners may value ambiance, experience, and recommendations; visitors on special occasions
Holidays exhibit a seasonal pattern; high-ticket customers may respond better to
Exclusivity is more important than discounts. In the cosmetics retail sector, replacement buyers have...
a logic distinct from that of consumers of new releases or promotional customers.
With data-driven segmentation, the company no longer needs to simply ask which promotion should...
to be sent and then to formulate more precise questions: which segment should receive a given
stimulus, at what point, with what benefit, and with what success metric? This change reduces
It avoids commercial waste and improves the alignment between supply and demand.
There is also an operational impact. Knowing the segments helps to plan inventory and size [products/services].
The team needs to adjust communication and train customer service. In restaurants, frequency standards and
Consumer categories can guide preparation, shopping, and suggestions for combinations.
In retail, repurchase cycles help predict replenishments and plan campaigns. In hospitality,
The history of preferences improves onboarding and reduces friction throughout the journey.

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4.2 Minimum customer analytics base and gradual maturity

The first obstacle to segmenting customers is not the lack of algorithms, but rather the inadequacy of...
Records. Many businesses have data scattered across cash registers, POS systems, apps, spreadsheets.
and schedules, with minimal integration between them. Purchases are not associated with customers; names appear
Duplicates; product categories don't follow a standard; discounts aren't recorded correctly.
Consistent; margins are separated from sales. Under these conditions, any advanced technique...
It loses reliability.

A basic customer analytics foundation should answer simple questions: who bought,
When did they buy it, how much did they spend, what did they consume, through which channel, was there a discount, and if the customer...
It's back. This information allows for the production of robust indicators without excessive sophistication.
Recency indicates distance; frequency reveals habit; monetary value indicates contribution.
The category consumed suggests a preference; the channel indicates convenience; the response to the promotion measures the...
sensitivity to encouragement.

Data governance, in this context, should be proportional to the size of the business. It is not required...
Not a complex corporate structure, but rather basic routines: standardize registrations, avoid
duplicates, define categories, record dates, protect access, and review inconsistencies. A
Segmentation based on incomplete records can lead to misdiagnosis and to
poorly targeted campaigns. Therefore, analytical maturity must evolve gradually: first,
RFM in spreadsheet format; then, simple dashboards; and only when there is a database.
sufficient, clustering or predictive models.

4.3 Managerial application of RFM and CLV

RFM is suitable for small businesses because it combines simplicity and managerial power. Customers
Those with high recency, high frequency, and high monetary value represent a priority core.
Consumers should not only receive discounts; they need to be recognized, protected, and...
eventually, they are encouraged to increase their engagement. Status benefits, early access,
Personalized service or specific experiences can generate more value than cost reductions.
price.

On the other hand, clients with a good history but low recency require reactivation. In this case,
The goal is not to reward current behavior, but to recover the lost connection. Consumers
Recent and low-frequency transactions constitute another relevant group, as the second purchase usually...
to be crucial in transforming experimentation into habit. Welcome campaigns,

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Consistent recommendations, post-purchase messages, and return benefits can increase...
probability of staying.
Customers with high frequency and low ticket size require margin analysis. They can be valuable because
recurring sales may require cross-selling or the creation of gift sets to increase sales.
contribution. However, high-ticket, low-frequency customers may deserve a different approach.
Seasonal, especially on holidays or specific consumption occasions.
Fader, Hardie and Lee (2005) demonstrate that RFM should be interpreted with attention to future value.
A purely historical reading may overestimate customers who have spent a lot in the past and
Underestimating growing consumers. Linking to CLV helps avoid this mistake. When the
The company observes recency, frequency, value, and trend, and then allocates relationship efforts accordingly.
in a more rational way.

4.4 K-Means and operational translation of segments

K-Means can deepen segmentation when the database has sufficient volume and quality.
Unlike RFM, which focuses on three main dimensions, clustering allows
combine frequency, recency, average ticket price, margin, dominant category, use of promotions,
Variety of products, channel, and time of consumption. With this, the business can identify groups.
which simple cuts do not reveal.
The application, however, requires rigor. Variables need to respond to a managerial hypothesis. Include
Using dimensions without criteria can generate statistically weak or commercially useless clusters.
Scales should be standardized, outliers should be evaluated, and the number of groups should be...
Defined as a balance between technical metrics and operational capacity. Small businesses
They rarely manage to run distinct campaigns for many segments; therefore, few groups
Well understood, they tend to be more useful.
After the clusters are formed, the crucial step is operational translation. “Group 1” or “Cluster 2” means nothing
to the team. It's necessary to name profiles: high-value recurring items, promotional items.
low margin, new with potential, profitable inactive, frequent moderate ticket or
Premium and seasonal products. This naming allows you to convert analysis into action: which client to contact, which
What benefit to offer, which campaign to test, which segment to prioritize, and which metric to track.
In the context of restaurants, segmentation by K-Means can support program levels of
Loyalty programs, consumer recommendations, return campaigns, and customer service training. No.
Cosmetics retail can guide scheduled replenishment, profile-specific kits, and offers of
Launches and reactivation of inactive clients. In the hospitality industry, it allows for differentiation of target audiences.

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Corporate clients, families, leisure tourists, and premium experience customers.

4.5 Evidence-driven loyalty programs

Loyalty programs should be designed starting with the segments, not beforehand. When the company
Creating benefits without understanding their basis risks rewarding behaviors that are not...
They need incentives or to attract consumers without retention potential. Bombaij and Dekimpe
(2020) demonstrate that loyalty programs have conditional effects, depending on
design, retailer strategy, format, and competitive context.
Immediate rewards can be more effective in certain contexts because they reduce the risk.
The distance between the action and the perceived benefit. In local businesses, this proximity is relevant: the
The customer quickly understands the value of participation. Deferred rewards can work.
when there is sufficient frequency and trust in the program. Progressive benefits create a
Status structures are important, but they require clarity and achievable goals. Multivendor programs, however...
While they may broaden their reach, they can dilute the connection with the individual establishment.
The choice of benefit should consider the margin, frequency, and experience. Discounts are easy.
They can communicate effectively, but they may lead the customer to make impulse purchases. Giveaways create perception.
Value without directly reducing the price. Recognition benefits, such as priority,
Customization or early access may be more suitable for premium segments.
Frequency-based rewards work best when the frequency is consistent with the cycle of...
consumption.
However, joining does not equate to loyalty. A program can gather many subscribers and still...
Therefore, failure will occur if frequency, retention, or margin are not increased. The redemption process also needs to be...
Interpret with caution: high rates may indicate engagement, but also excessive cost.
A robust evaluation should combine repurchase rate, frequency, average ticket size, margin, and retention rate.
Cohort, benefit utilization, and reactivation.

4.6 Personalization, experience and trust

Personalization is a natural consequence of segmentation, but it should not be confused with...
Invasion. A company that understands consumer patterns can improve its recommendations.
To reduce noise in communication and anticipate needs. This utility increases the perception of
Value. However, the use of data must respect the legitimate expectations of the customer.
In retail, a recommendation for a complementary product can be well-received when it relates to the product.

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based on purchase history. In restaurants, suggest a combination consistent with preferences.
Previous experiences can enrich the experience. In hospitality, recognizing the preferences of
Hosting reduces friction. In all cases, personalization should feel like a service, not a service.
Excessive monitoring.

Lemon and Verhoef (2016) highlight that experience occurs throughout the journey. This means that
The data should not only be used to sell more, but also to improve every aspect of...
Contact. A personalized campaign doesn't compensate for bad customer service. A program of
Fidelity does not correct operational inconsistencies. A data-driven recommendation loses.
Value if the product is not available or if the team does not understand the logic of the offer.
Trust therefore becomes a strategic asset. The client who provides data expects a benefit.
Safety and respect. Excessive collection, insistent communication, lack of transparency or use.
Improper disclosure of information reduces credibility. Customer loyalty depends on the perception that...
The company uses data to provide better service, not to exploit vulnerabilities.

4.7 Ethics, privacy and the limits of segmentation

Data-driven segmentation involves ethical risks. Classifying customers by economic value.
This can lead to unfair unequal treatment. Personalizing offers can bring you closer to a...
Manipulation occurs when vulnerabilities are exploited. Behavioral analysis can generate inferences.
Sensitive. Small businesses sometimes underestimate these risks because they believe that privacy...
This is a concern exclusive to large companies. This perception is inaccurate.

The LGPD (Brazilian General Data Protection Law) requires that personal data be processed with purpose, adequacy, necessity,
Transparency and security (BRAZIL, 2018). The European GDPR consolidated similar parameters.
on an international scale, especially regarding minimization, legality, and limitation of purpose.
and to the rights of data subjects (EUROPEAN UNION, 2016). The ANPD, when dealing with small data controllers
size, recognizes proportionality, but does not eliminate the need for minimum governance (ANPD,
2022).

In practice, loyalty programs should clearly state what data is collected and
For what purpose? The business should avoid excessive data collection and restrict internal access.
Protect databases, review technology providers, and ensure customers understand.
The use of your information. Consumption data should not be shared without a proper basis.
Sensitive information should be avoided when it is not strictly necessary.
Ethics also applies to campaign design. Segmentation should not be used to discriminate.
Unfairly, coerce consumers, or induce harmful consumption. Legitimate personalization.

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It increases relevance and improves the experience; abusive personalization exploits asymmetries of Information. The dividing line lies in transparency, proportionality, and real benefit to... customer.

4.8 Application to retail, restaurants and hospitality

The application of Business Analytics in small businesses should follow an incremental logic. First, the foundation is established. Then, simple indicators are measured. Next, [the system] is built. segments. Only then are loyalty actions defined. This sequence avoids campaigns disconnected from real behavior.

In the cosmetics retail sector, analysis can identify repurchase cycles, complementary products, High-value clients, promotional buyers, and consumers interested in new product launches. From this, strategies can include refill reminders, personalized kits, and benefits for... Category, early access, and reactivation campaigns. The focus should be on increasing repeat business and... the value, without compromising the margin.

In restaurants, POS data allows for the examination of frequency, time, and consumption by category, average ticket price, associated items, and response to special dates. These records can guide return offers, tiered programs, beverage recommendations, seasonal campaigns and Team training. Loyalty, in this environment, depends as much on the benefit as on the... Operational experience. A customer returns when they perceive consistency, recognition, and value.

In the hospitality industry, segmentation can distinguish between corporate guests, leisure guests, families, recurring and occasional. Benefits should reflect distinct needs: convenience, Flexibility, recognition, comfort, price, or experience. Preference data may apply. Improving customer service requires caution to avoid overstepping privacy boundaries.

Local services share a similar logic. Clinics, salons, workshops, gyms, and consulting firms. They can use frequency, recency, packages, service categories, and return to Segment your customers. In these cases, loyalty is associated with trust, predictability, and... to the continuation of the relationship.

4.9 Metrics and limitations

Loyalty strategies should be evaluated based on metrics. The repurchase rate measures the Return over a defined period. Average frequency indicates consumption habits. The ticket Average per segment indicates the purchase value. Margin per segment assesses the actual contribution. A

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The enrollment rate measures initial acceptance of the program. The redemption rate indicates the use of benefits.
Reactivation of inactive customers measures customer recovery. Cohort retention tracks this.
Permanence over time. CLV estimates future value.
No metric should be read in isolation. Increased frequency may result from discounts.
which reduce the margin. High adherence to the program may not generate behavioral change. A
Increased ticket size may be concentrated among a few customers. Low redemption rates may indicate a benefit.
Unattractive or with confusing rules. Reactivation can only occur during campaigns.
promotional offers, with no further commitment.
The application of Business Analytics in smaller businesses faces limitations. Small databases.
They reduce statistical stability. Incomplete records compromise inferences. Data
Short historical data sets make seasonal analysis difficult. Margins are not always linked to sales.
Customers may not be identified. Furthermore, the data shows patterns, but doesn't explain them.
fully consider the motivations. A customer may stop buying due to a change of address, or...
Loss of income, a negative experience, or external factors. Quantitative analysis should be
combined with managerial observation, feedback, and knowledge of the context.

Final Considerations

Customer segmentation based on Business Analytics represents a consistent alternative.
for small and medium-sized businesses that want to improve their loyalty strategies. Instead of
to rely exclusively on generic campaigns, broad discounts, or intuitive perceptions,
Retailers, restaurants, hospitality businesses, and local services can use registries.
transactional tools to understand behavior, differentiate profiles, and guide business decisions.
more precise.
International literature provides a solid foundation for this practice. Chen, Chiang, and Storey
They demonstrate the relevance of Business Intelligence and Analytics in transforming data into...
Organizational impact. Fader, Hardie, and Lee show that RFM can be connected to future value.
from the client's perspective, avoiding purely retrospective readings. Bombaij and Dekimpe demonstrate that the
Loyalty programs function contingently, depending on the design, strategy, and...
competitive context. These contributions allow us to treat loyalty as an analytical architecture,
not as a mere distribution of benefits.
RFM analysis provides an accessible starting point, especially for companies with a base of
Simple sales. CLV enhances the economic rationality of retention. K-Means clustering
Allows for refining groupings when there is sufficient data in quantity and quality. Programs

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Loyalty programs become more effective when designed from segments, with benefits.
compatible with behavior, margin, and experience. Personalization, in turn,
It strengthens the relationship when it is perceived as a relevant service, and not as an invasive use of information.

The applied analysis demonstrates that local businesses can develop analytical maturity without resorting to complex technological structures. POS data, registrations, purchase histories,
Reserves and spreadsheets can support important decisions when organized with discipline.
The main skill lies not only in operating tools, but in translating indicators into actions.
best practices: who to contact, what benefit to offer, which campaign to test, which segment to prioritize and How to measure results.

Adopting data-driven segmentation implies responsibilities. Privacy,
Transparency, purpose, minimization, security, and non-discrimination should guide the collection and processing of data.
Use of customer information. Sustainable loyalty depends on trust. Data should serve a purpose.
to improve the experience, reduce friction, and increase the relevance of offers, not to
To manipulate vulnerabilities or exploit asymmetries.

It can be concluded that Business Analytics strengthens customer loyalty when it integrates method, interpretation, and... responsibility. Its value lies not only in consumer ratings, but also in
building smarter, more measurable, profitable, and ethical business relationships
sustainable.

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