Tecnológico de Monterrey

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Aplicación de métodos multivariados en ciencia de datos

Group 602

Customer Satisfaction Case Study

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TechnoServe Solutions, a technology consulting firm with multiple service areas, wants to understand their customer satisfaction survey data using factor analysis. The company has collected a customer satisfaction dataset consisting of 3,400 responses from 850 enterprise customers. The dataset contains 23 satisfaction dimensions with a scale from 1 to 7 and 5 outcome variables. The purpose of this case study is to examine which elements of the customer experience are driving overall satisfaction, renewal likelihood, and recommendations, and to propose actions to strengthen the weak levers. The analysis uses Common Factor Analysis with Maximum Likelihood (FA-ML). The number of factors is k=5, selected by the FA scree and Kaiser $\lambda > 1$. Rotations were reviewed to avoid an arbitrary view of the space. Varimax explains 50.4% and Promax 60.4% of common variance. Because the factor space shows substantial co-movement, with max=0.617 (>0.32), the interpretation uses Promax. In practice, customer experience dimensions tend to move together, and forcing independence would hide that reality.

The analysis highlights that 5 factors account for most of the movements in the customers' metrics (Technical, Value & Cost, Relationship, Delivery/Project, and Support/Service). Even though these factors all together explain a high portion of the variability, the main drivers are Technical and Delivery, with Relationship also supporting. In practical terms, customers appreciate when solutions are technically solid, well integrated, correctly delivered, and on time. In the data, Delivery/Project and Technical show the strongest associations with overall satisfaction (correlations of about 0.65 and 0.64, respectively) and with renewal likelihood (around 0.52 and 0.51). Relationship also supports these outcomes, with correlations close to 0.62 for satisfaction and 0.49 for renewal. For recommendation-type outcomes (NPS, referrals), Delivery/Project, Technical, and Relationship again lead (correlations in the 0.40–0.45 range), while Support/Service and Value & Cost contribute as secondary but still meaningful levers. These figures are Pearson correlations with factor scores and should not be read as regression betas or as direct measures of R^2. As a sanity check, a simple linear model using the 5 factor scores as predictors explains roughly 38–40% of the variance in renewal likelihood and a similar order of magnitude for overall satisfaction and NPS, indicating that the factor structure captures a substantial share of the movement in outcomes while leaving room for additional drivers outside the survey.

In view of these findings, it is recommended that TechnoServe Solutions prioritize each factor depending on its weight on the customers’ scores. On the technical side, make

integrations frictionless by using a standard checklist and pre-production smoke tests, keep very short task-based documentation up to date, and speed up fixes through severity queues, a first-response SLO (Service Level Objective), and playbooks for recurring issues. On the delivery/project side, give clients time and visibility with a milestone plan and a client-facing board that includes explicit buffers, enforce quality gates before every hand-off with a clear definition of done, and apply a light change/budget control with an impact log so scope changes don't look like service failures. Then, reinforce relationships by committing to <24h response from the account manager, setting fixed touchpoints and monthly summaries, and offering quarterly business reviews with 1–2 KPIs, shared objectives, and a direct channel to raise risks. As boosters, show ROI with a simple 3-metric before/after dashboard, keep cost communication stable and transparent, and enable users through 2–3 minute micro how-tos, a searchable knowledge base, and weekly office hours. This can be rolled out in 30–60–90 days: 0–30 days for integration checklist, milestone board, and comms SLA; 31–60 days for incident playbooks, QA gate, change control, and first ROI storyboard pilots with a few key accounts.; 61–90 days for micro-training library, knowledge base, QBRs with shared roadmap, and a standard impact dashboard that tracks the main factor-level drivers over time.

Link to our video presentation: https://youtu.be/KROf4hE5MmU