Bridging the Risk Management Gap: Adopting the Factor Endogenous Behaviour Aggregation (FEBA) Approach Beyond Banking

Sokolov, Yuri I.

Plekhanov Russian University of Economics

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Yuri I. Sokolov

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1. Executive summary

While the banking sector has long been at the forefront of risk management practices, other service industries often lag behind. This disparity is particularly evident in sectors where value-oriented management is crucial for maintaining competitiveness. This article focuses on the development and application of the Factor Endogenous Behaviour Aggregation (FEBA) approach[1] in service industries such as healthcare and health resorts.

In these sectors, risk management is typically handled on an *ad hoc* basis due to the absence of stringent regulatory requirements. Understanding and managing customer loyalty is crucial for sustained profitability and growth. In this context, the SOL (Satisfaction Outcome Loyalty) Solution, proposed by Sokolov (2015), emerges as a pivotal tool for quantifying various risks within the Service Profit Chain.

The SOL Solution provides a structured approach to quantify risks associated with employee performance, customer satisfaction, and loyalty. By assigning numerical values to these risks, companies can better understand their impact on profitability. This quantification allows businesses to prioritize actions that will have the most significant positive impact on customer loyalty and profitability. The tool also enables predictive analysis, helping businesses foresee potential risks and opportunities by analyzing trends and patterns.

Keywords: SOL Solution, Service Profit Chain, FEBA approach, competitiveness, healthcare, health resorts, satisfaction, loyalty, risk management

JEL classification: L80, I11, M31, G32

[1] The approach was set up in "Interaction between market and credit risk: Focus on the endogeneity of aggregate risk" and mentioned in Roubini Global Economic Digest as "Advance in Credit Risk Management".

2. Introduction

In the context of financial institutions, endogenous risks refer to those risks that arise from within the system itself. Unlike exogenous risks, which stem from external factors such as economic downturns or geopolitical events, endogenous risks are inherently tied to the behavior and interactions of the system's participants.

These risks are particularly insidious because they can be self-reinforcing, leading to cascading effects that amplify initial disturbances. During periods of financial stress, clients might exhibit herding behavior, where they collectively move in the same direction, such as withdrawing large sums of money simultaneously. This can exacerbate liquidity issues for banks, creating a self-reinforcing cycle of instability.

Credit portfolios represent a significant aspect of their business and is inherently exposed to various risks. Traditional risk management approaches primarily focus on exogenous risks, often overlooking the complexities introduced by endogenous factors.

For example, an exchange rate depreciation *per se* creates both winners and losers, and financial institutes need to pin down the distribution of these gains and losses and the magnitude of their impact on banks' credit portfolios. With a weaker exchange rate, exporters and net holders of foreign assets will benefit, and vice verse, those relying on imports and net debtors in foreign currency will be hurt.

In the event of an economic downturn, clients might strategically default on their loans, believing that the bank will prefer restructuring the debt over lengthy legal battles. This rational decision by clients can significantly increase the bank's non-performing loans, impacting its financial health. By considering the rational but potentially dangerous behavior of clients in response to endogenous risk factors, banks can better prepare for and mitigate these risks.

In this context Sokolov (2009) put forward the Factor Endogenous Behaviour Aggregation (FEBA) approach to take the interaction between different types of risks into account, which exerts its influence by FX risk via firms' net open positions and the change of the firms' competitiveness.

The approach implies the use of additional dimension of uncertainty - the extent to which borrowers rely on foreign or domestic consumption. In line with the approach "difference in borrower's behaviour" should be commensurate with the ambiguous influence of exchange rate on borrowers' creditworthiness and endogeneity of aggregate risk.

The intensity of behavioral responses from financial institution clients is determined by their level of loyalty to the organization. Within the framework of credit risk assessment, incorporating loyalty risk into scoring models provides a higher degree of risk differentiation even within narrow traditional scoring ranges. Furthermore, loyalty effects may remain insensitive to economic recession pressures. By incorporating endogenous factors like *i.a.* client loyalty into risk assessment models, banks can better assess and manage risks associated with their credit portfolios.

Global Economic Symposium, primarily focused on problems that cannot be solved by individual countries or organizations alone, highlighted the relevance of the FEBA approach in pivotal areas such as "Avoiding Currency Wars and Achieving Balanced Global Recovery" and "The Future of Financial Regulation."[2]

A macroeconomic and market strategy research firm "Roubini Global Economics"[3] highlighted the value of this approach as a complement to existing models in banks, particularly in managing a bank's credit portfolio through active risk concentration management and profit control relative to risk.

While the banking sector has long been at the forefront of risk management practices, organizations in other industries often lag behind. This is particularly evident in sectors where value-oriented management is crucial for maintaining competitiveness. The lack of formal risk management systems outside the banking industry underscores the urgent need for greater awareness and the adoption of proactive risk management strategies across various sectors.

This article focuses on the development and application of the Factor Endogenous Behaviour Aggregation (FEBA) approach in service industries such as healthcare and health resorts. These sectors typically handle risk management on an ad hoc basis due to the absence of regulatory requirements.

A structure of the article covers the key aspects mentioned above, including an introduction to the FEBA approach, the Service Profit Chain concept, the SOL Solution and its features, applications in healthcare, health resorts, practical implementation considerations, and concluding remarks.

[2] Global Economic Symposium, “Avoiding Currency Wars and Ensuring Balanced Global Recovery”, GES-2012 (http://www.global-economic-symposium.org/knowledgebase/the-global-polity/avoiding-currency-wars-and-ensuring-balanced-global-recovery?from=21#challenge-tab-open-library).

[3] Roubini Global Economics ranked as the #1 Web Site in Economics in the world by The Economist Magazine

3. The Service Profit Chain and Customer Loyalty

In today's highly competitive service and healthcare sectors, managing client behavioral risks and loyalty has become a pivotal aspect of organizational strategy. Behavioral risks, particularly those related to client loyalty, are increasingly recognized as critical to maintaining service quality and customer retention.

Behavioral risks in service organizations and healthcare institutions encompass a range of factors including customer dissatisfaction, loyalty fluctuations, and unpredictable behaviors that can affect service outcomes and reputation. These risks are often endogenous, meaning they are influenced by internal factors within the organization such as service quality, communication, and staff behavior.

The Service Profit Chain[4] is a powerful concept that illustrates the interdependence between company profitability and customer loyalty.The Service Profit Chain concept was developed by researchers at the Harvard Business School in the 1990s. It emphasizes that value is created through a series of interlinked steps:

1. Loyal and Efficient Employees: The chain begins with employees. Loyal and efficient employees are more engaged, productive, and committed to delivering high-quality service. Their positive attitude and performance create a better experience for customers.

2. Customer Satisfaction: When employees are engaged and efficient, they are better equipped to meet and exceed customer expectations. This leads to higher levels of customer satisfaction, as customers appreciate the consistent and high-quality service they receive.

3. Customer Loyalty: Satisfied customers are more likely to remain loyal to the company. They are less likely to switch to competitors and more likely to make repeat purchases, thereby increasing the company’s revenue.

4. Company Profits: Customer loyalty directly impacts company profits. Loyal customers generate a steady stream of revenue, reduce the costs associated with acquiring new customers, and often contribute to positive word-of-mouth marketing.

However, to address the complex questions of customer retention, financial

[4] The Service Profit Chain concept was introduced by James L. Heskett at. al. in their book "The Service Profit Chain: How Leading Companies Link Profit and Growth to Loyalty, Satisfaction, and Value" published in 1994.

loss avoidance, and value creation efficiently, tools for risk management are necessary. These tools provide the quantitative basis needed to set priorities and make informed decisions, considering all risks and opportunities.

4. The SOL (Satisfaction Outcome Loyalty) Solution

Endogenous behavioral risk factors encompass intrinsic attitudes, perceptions, and decision-making processes that influence customer loyalty. Understanding and leveraging these internal factors are essential for service organizations seeking to differentiate themselves in crowded market spaces.

Loyalty risk, the potential for a decline in customer loyalty, poses a significant threat to service providers, influencing business sustainability and growth. This paper systematically examines the management of loyalty risk within healthcare, hospitality, and dental services, emphasizing industry-specific tools for assessing customer satisfaction and the imperative of quantifying these risks.

Loyalty risk involves the risk of diminishing customer loyalty, which can result in the loss of repeat business, negative word-of-mouth, and ultimately a reduction in revenue. In service industries where customer experience and satisfaction are crucial, managing loyalty risk is vital. Particularly in the healthcare, hospitality, and dental sectors, maintaining strong client relationships is paramount for sustained success.

Sokolov (2015) introduced the SOL (Satisfaction Outcome Loyalty) Solution as an essential framework for quantifying various risks within the Service Profit Chain. The SOL Solution integrates risk management with customer satisfaction metrics, offering a comprehensive perspective on the factors influencing customer loyalty and profitability.

One pressing issue in service organization management is the implementation of value-based management. This approach centers all processes around the patient or client and their needs, rather than the services provided. This transition towards value-oriented management was underscored during the masterclass "Patient-Centered Management Using the SOL Solution."[5]

Healthcare sector representatives have emphasized the endogenous risks associated with value-oriented process development, comparing it to walking a tightrope. A slight deviation can lead to client loss, while a deviation in the opposite direction can compromise financial viability as investments fail to

[5] This event took place on 3-4.12.2021 as part of the International Conference "World Quality Standard: From Idea to Implementation" in Kazan, Russia.

yield returns. In this complex scenario, several critical questions arise:

Creating Additional Value within the SOL-Solution: How can a company create additional value for customers, adhering to the Pareto principle, where 20% of efforts yield 80% of results?

Identifying Critical Services: How can organizations determine which services and operational aspects contribute to sustainable development and which areas require immediate attention?

A key strategy in managing behavioral risks and opportunities is proactive identification. The SOL Solution involves regular monitoring of customer feedback, employing a portfolio approach to cluster the customer base and identify risk concentrations. The adaptive intelligence of the SOL Solution, based on big data, is crucial for forecasting and preparing recommendations.

Tools such as customer satisfaction surveys and advanced analytics play a crucial role in identifying potential risks before they become critical. To achieve maximum precision in assessing and managing behavioral risks, the best industry practices must be utilized.

For example, in the field of dentistry, tools like the Dental Satisfaction Questionnaire (DSQ) are used to gather patient feedback. The DSQ methodology yields stable and statistically significant results regardless of national and regional nuances. These conclusions have been echoed by experts and healthcare authorities in Norway, Spain, Canada, Australia, India, and other countries.

In Russia, the DSQ methodology was first utilized by Skyline Risk Solutions, LLC within a collaborative project with the Ministry of Health of the Moscow Region and dental associations.

The adapted version of the DSQ questionnaire includes questions such as:

1. Appointments with the dentist can always be scheduled at a convenient time.
2. The dentists are always attentive to the problem.
3. More attention should be given by dentists to pain reduction.
4. Dentists explain what they are doing and how much it will cost.
5. The cost of clinic services is too high.
6. Waiting for the doctor's appointment does not take long.
7. The waiting conditions for appointments are comfortable.
8. Dentists always show respect to the patients.

9. The clinic is conveniently located.
10. Pain does not bother me.
11. Dental treatment could have been better.
12. The reception always reminds about the upcoming visit.

The DSQ methodology involves responses on a 5-point Likert scale ranging from "strongly agree" to "strongly disagree." The systematic collection of data within the SOL Solution is facilitated through specially designed software. This enables patients to comfortably fill out electronic surveys and provide feedback for enhancing service quality.

By leveraging the SOL Solution and methodologies like DSQ and expanding the data universe through big data at the portfolio level, dental clinics can enhance patient satisfaction and foster long-term loyalty and trust among their clientele thanks to the following properties of the SOL Solution:

Identification of Improvement Areas: DSQ results can pinpoint specific areas requiring enhancement, enabling targeted efforts to improve patient experience and service quality.

- Personalized Patient Care: Insights derived from DSQ responses facilitate the creation of personalized treatment plans and tailored service approaches, aligning with patient preferences and needs.
- Treatment Quality Optimization: Integrating DSQ data into the SOL Solution allows for the optimization of treatment processes, considering patient feedback to enhance overall treatment quality.
- Strengthening Patient Loyalty: Positive DSQ outcomes contribute to building patient trust and loyalty, fostering long-term relationships with the clinic and its services.
- Benchmarking: Ability to benchmark value-oriented indicators and management efficiency within a specific group of companies.
- Rating: Ability to compare the quality of dental services within provider rating programs. For example, the SOL Solution is used in the pilot project Russian Dental Association "Quality Dentistry of Russia."[6]
- Public Health: Supporting organizational decisions when implementing management innovations at the regional level.

One of the pioneering projects that integrated the SOL Solution and DSQ

[6]"Quality Dentistry of Russia" is an information product based on the use of digital technologies and the FDI`s definition of oral health, according to which patient perception plays an important role in assessing the quality of dental services. https://e-stomatology.ru/star/industrial/quantity_dent.php

methodology was a collaborative effort between the Ministry of Health of the Moscow Region and Skyline Risk Solution, LLC. This project focused on evaluating the effectiveness of infrastructural changes by considering patient feedback in dental organizations. Over 50 dental clinics in the Moscow region actively participated in this initiative.

Practical aspects of implementing the SOL solution in healthcare organizations were discussed at the IV Annual Conference "From Risks to Opportunities" held at the National Medical Research Center for Rehabilitation and Balneology. The conference was organized by the National Resort Association, the Russian Dental Association, the NRC RB, and Skyline Risk Solutions, LLC[7].

The integration of the SOL Solution within customer-centric management strategies empowers service organizations to navigate the delicate balance between customer satisfaction and financial sustainability. By leveraging the SOL Solution's causal nature, businesses can proactively address challenges, optimize resource allocation, and create a sustainable framework for organizational development in alignment with customer needs.

The implementation of the SOL Solution not only helps prioritize tasks and reduce risks within the Service Profit Chain framework but also offers a significant advantage by allowing the aggregation of collected data into a comprehensive medical risk management system.

These systems are typically built based on ISO 31000, the international standard for risk management, which provides guidelines and principles for managing risk in various industries. Thus, risks related to patient loyalty and dissatisfaction are effectively reflected in the overall risk register and heat maps of risks and opportunities within the organization.

In the intricate landscape of service industries such as healthcare and health resorts, the adoption of robust risk management frameworks like the Factor Endogenous Behaviour Aggregation (FEBA) approach is critical. The comparative analysis of endogenous risks across different sectors underscores the urgent need for comprehensive tools that not only identify but also quantify behavioral risks. The SOL Solution, as detailed in this article, provides an effective means to bridge this gap.

5. Concluding Remarks

The banking sector has long set the standard for risk management practices,

[7] https://ktovmedicine.ru/news/2020/1/ot-riskov-k-vozmozhnostyam-2020-cennostno-orientirovannoe-upravlenie-v-zdravoohranenii.html

often outpacing other industries in developing sophisticated tools and methodologies. However, the service industries, particularly those focusing on value-oriented management like healthcare and health resorts, face a pressing need to adopt similar robust frameworks to manage their unique set of risks.

Endogenous risks, originating from within the system and driven by the behavior of its participants, present a significant challenge in these sectors. Unlike exogenous risks, which are influenced by external factors, endogenous risks are deeply embedded within the internal dynamics of the organization. These risks can be particularly perilous as they may lead to cascading effects, amplifying initial disturbances and impacting overall stability.

The Factor Endogenous Behaviour Aggregation (FEBA) approach offers a comprehensive framework for understanding and managing these risks. By integrating this approach with the SOL Solution, service organizations can effectively quantify and mitigate risks associated with customer loyalty, employee performance, and overall service quality. The structured quantification of these risks allows businesses to prioritize actions that yield the most significant positive impact on profitability and customer satisfaction.

The SOL Solution’s emphasis on proactive identification and continuous monitoring of customer feedback through tools like the DSQ exemplifies the best practices in managing behavioral risks. This methodology not only enhances patient satisfaction but also fosters long-term loyalty, which is crucial for sustained growth in the healthcare sector.

Implementing the SOL Solution within the framework of value-oriented management provides a strategic advantage, enabling service organizations to navigate the complex interplay of endogenous risks and opportunities. By leveraging big data and advanced analytics, the SOL Solution facilitates a holistic view of the Service Profit Chain, ensuring all business aspects are aligned towards achieving optimal customer satisfaction and financial viability.

In conclusion, the integration of the FEBA approach within the SOL Solution represents a significant advancement in risk management for service industries. By adopting these methodologies, organizations can better prepare for and mitigate the unique challenges posed by endogenous risks, ultimately enhancing their competitiveness and sustainability in the market. The successful application of these strategies in healthcare and health resorts sets a precedent for other service sectors, highlighting the universal relevance and efficacy of proactive risk management practices.

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