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Modeling the Valuation of Myket Brand Using Weibull Distribution

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Abstract

This research aims to model the decline in the value of the Myket brand, as one of the leading platforms for distributing mobile applications in Iran, using Weibull distribution. Data were collected from Myket's financial statements (including operating income of 357 billion Tomans and evaluation costs of 8 billion Tomans per year (2024) and non-financial indicators such as 26 million monthly active users and reports from global platforms such as Google Play and App Store). The statistical population consisted of 10 active digital brands in Iran, of which Myket was purposefully selected. The research method was quantitative and descriptive-analytical, and the analyses were conducted with Python (lifelines package) and R (survival package) software and the maximum likelihood method. The findings showed that the Weibull model predicted the trend of brand value decline with high accuracy (R^2=0.92) and identified the decrease of 2.6 million monthly active users and increasing competition with platforms such as Cafe Bazaar as the main factors of the decline in value. Monte Carlo simulation showed that a 10% decrease in users increases the acceleration of brand value decline by 15%. This research was conducted with Providing a localized model suggests that Myket managers maintain and enhance brand value by strengthening the digital platform and developing innovations such as expanding digital content. This model can also be generalized to other native Iranian digital platforms.

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Extended Abstract

Introduction

Brand valuation is a process that determines the economic and competitive value of a brand and is used in strategic management, capital raising, and market development (Guzmán & Baalbaki, 2021). A brand is not only a symbol that distinguishes one product from others, but also includes all the characteristics that come to mind when a buyer thinks of that brand. These characteristics are the tangible, abstract, psychological, and social characteristics of that product (Meysamiazad et al., 2024). A brand is a fundamental asset of a company. Brands occupy a very special place in the lives of many customers. People try to generalize themselves by using brands and consuming them (Asgari & Naghdi, 2021). In fact, a brand is defined by individuals, not companies, because each person's inner feeling and perception are different and ultimately each person creates their own personal version of the brand; as a result, a brand is a completely relative concept, with part of the brand in the mind of the individual and part of it in the mind of society (Moghaddam, 2023). In today's competitive era, brand valuation has always been a major concern for all business owners in the world. When an organization's or company's brand is valued, hidden, fundamental, and accurate information is obtained about the strength of the brand compared to competitors. As a native digital platform, Myket plays a pivotal role in Iran's digital ecosystem, and maintaining its brand value is of strategic importance to compete with local (such as Cafe Bazaar) and global platforms (such as Google Play and App Store). Iran's digital market faces numerous challenges such as fierce competition, rapid technological advances, economic fluctuations, and regulatory restrictions that lead to nonlinear behavior of brand value. The importance of this research is notable from several perspectives: first, native digital platforms such as Myket have a special place in Iran's digital economy, and strengthening their brand value is vital for competitiveness against domestic and foreign competitors. Second, the lack of localized analytical models for valuing digital brands in Iran has challenged strategic decision-making and reduced development opportunities. Third, the use of Weibull distribution, which is known for its flexibility in modeling nonlinear trends (Lawless, 2003), offers an innovative approach to analyzing brand value in specific Iranian conditions, such as sanctions and high inflation. By providing a comprehensive framework, this study not only fills the gap in the Iranian scientific literature, but also provides a generalizable model for other digital platforms, such as fintech (Zarinpal, App), e-commerce (DigiKala), and digital services (Snap). Unlike traditional methods (ISO 10668), this study provides a localized framework by integrating financial and non-financial data that is generalizable to other Iranian digital platforms and contributes to the theoretical understanding of brand depreciation in volatile markets. This study, using financial and non-financial data from Myket, presents a new model for brand valuation and fills the gap in the application of Weibull for local digital brands; therefore, this research aims to develop a localized and accurate model for valuing Myket's brand and predicting its dynamic trends, including the potential decrease or increase in brand value, using Weibull distribution. The main question of the research is: how is Myket's brand value evaluated accurately using a model based on Weibull distribution and predict its dynamic trends?

Theoretical Framework

According to the American Marketing Committee (1960), a brand is a name, symbol, or design that distinguishes products or services from those of competitors. The Customer-Based Brand Management (CBBE) model emphasizes the role of brand awareness, perceived quality, and customer loyalty (Yoo et al., 2000). Traditional valuation methods include the income approach (based on future cash flows, such as the DCF model), the cost approach (based on brand creation costs), and the market-based approach (based on the selling prices of similar brands and the ISO 10668 standard). However, these methods have limitations in the digital environment due to the rapid changes and nonlinear behaviors of brands (Christodoulides & Veloutsou, 2022). Brand decline in digital platforms may occur due to reasons such as reduced user engagement, market saturation, or increased competition (Iglesias et al., 2020). The Weibull distribution, as a continuous probability distribution, is widely used in survival and reliability analysis due to its flexibility in

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modeling temporal and nonlinear data (Lawless, 2003). This distribution, with shape (k) and scale (λ) parameters, can model different patterns of brand decline, from rapid initial decline to gradual decline in later stages. If (k < 1), the decline is rapid at first and then slows down; if (k = 1), the decline is at a constant rate (similar to an exponential distribution); and if (k > 1), the decline is slow at first and then accelerates (Ausubel & Meyer, 1999). These features make the Weibull distribution suitable for analyzing the decline of Myket's brand in the competitive and economic conditions of Iran.

Brand depreciation on digital platforms may occur due to reasons such as reduced user engagement, market saturation, or increased competition (Iglesias et al., 2020). This phenomenon is more complex due to its dependence on dynamic variables such as the number of active users, engagement rate, and annual revenue. Traditional models usually use simple distributions such as exponential or logarithmic, which cannot properly model nonlinear patterns of depreciation (Hyun et al., 2024).Ko (2025) in a study investigated a put option pricing model for car leasing that was designed based on the Weibull distribution. This study compares the performance of the Weibull model with the lognormal model and shows that the Weibull model is more accurate in predicting put option pricing. This study used data from two popular car models in South Korea (Hyundai Sonata and Tucson). After removing outliers (including sales to employees and vehicles with more than 20,000 km per year), the final dataset included 57,472 transactions for Sonata and 14,931 transactions for Osman.Khorasani et al. (2025) in a study, identified and prioritized organizational capabilities that affect brand positioning of food companies. The statistical population of the study included 13 senior managers and marketing and sales managers active in the food industry. A semi-structured interview and a data-driven approach were used, and the results showed that consequences, strategies, contextual factors, intervening factors, and causal factors had the highest weight, respectively.

Research methodology

This research used a quantitative and descriptive-analytical approach and was conducted with a case study design. Myket was purposefully selected from among 10 active digital brands in Iran, based on criteria such as the number of monthly active users (MAU), market share, and annual revenue. Data is collected from the following sources:

• Financial data: Myket's financial statements, including operating income of 357 billion riyals (223 billion from software sales, 90 billion from advertising, 41 billion from digital traffic, and 3 billion from e-books) and valuation costs of 8 billion riyals in 2024.

• Non-financial data: 26 million MAUs, 140 million monthly downloads, 50 million active installs, 180 million monthly searches, and 900 million minutes of digital content streaming in 2024.

• Global data: Reports from platforms such as Google Play and the App Store from reputable sources such as Interbrand (2021) and Statista.

Due to the lack of complete non-financial data for the years 2020 to 2023, it was assumed that MAU decreased from 30 million in 2020 to 26 million in 2024, which is consistent with the competitive trends in the Iranian market. The independent variable time (t) was defined in monthly intervals from 2020 to 2024, and the dependent variable Myket brand value (V(t)) was measured through financial and non-financial indicators. The moderator variables included competition intensity (cafe market), customer loyalty, marketing budget, and innovation (digital content expansion). The control variables included industry activities, economic conditions, and regulatory constraints. Data analysis was performed with Python (lifelines package) and R (survival package) and the maximum likelihood estimation (MLE) method. The Weibull model was fitted as (V(t) = V_0 \cdot \exp\left(-\left(\frac{t}{\lambda} \right) ^k\right)), where (V_0) is the initial value, (k) is the shape parameter, and (\lambda) is the scale parameter. The validity of the model was assessed with (R^2), MAE, and RMSE. Monte Carlo simulation and tests of stationarity (Augmented Dickey-Fuller, Phillips-Perron), collinearity (VIF), and autocorrelation (Durbin-Watson) were used to ensure the robustness of the model.

Research findings

The Weibull model showed high prediction accuracy ((R^2 = 0.92), MAE = 0.12, RMSE = 0.15), and outperformed the exponential ((R^2 = 0.78)) and lognormal ((R^2 = 0.80)) models. The estimated parameters ((k = 1.8), (\lambda = 24) months) showed a slow initial decline and a subsequent accelerated decline, which is consistent with the nonlinear behavior of digital brands (Al-Momani et al., 2024). Key factors in the decline included a 2.6 million MAU decline (from 30 million in 2020 to 26 million in 2024) and competition from Cafe Bazaar. Monte Carlo simulations showed that a 10% decline in MAU increases the acceleration of decline by 15%, while an increase of 8 billion riyals in marketing budget reduces it by 8%. Innovations such as streaming 900 million minutes of digital content moderated the decline by 10%. Cox regression analysis confirmed the significant effects of the moderator variables: customer loyalty (HR = 0.52, 48% risk reduction), marketing budget (HR = 0.66, 34% risk reduction), and competitive intensity (HR = 2.18, 118% risk increase). The validity of the model was confirmed with AIC = 233.42, BIC = 240.88, and Anderson-Darling test ($p < 0.05$). Stationarity tests (ADF: -4.81, ($p = 0.00005$); PP: ($p < 0.05$), VIF (< 5), and Durbin-Watson (1.92) showed the robustness of the model.

Conclusion

This research uses Weibull distribution to model the decline in the value of the Myket brand as one of the leading platforms for distributing mobile applications in Iran. The Weibull model shows a slow decline in brand value in the early stages and an accelerated decline in the later stages, which is consistent with the nonlinear behavior of digital brands. This finding is consistent with the study (Lawless, 2003) that proposes Weibull to model nonlinear temporal phenomena. Compared to (Ko, 2025) that used Weibull to price car put options with high accuracy (compared to lognormal), the present model also showed higher accuracy compared to lognormal. Based on the results, Myket managers are advised to:Focus on user retention strategies, platform improvement, and innovation (such as digital content expansion). An increase of 8 billion riyals in marketing budget could offset the decline by 8%. Policymakers can strengthen the digital ecosystem by providing financial incentives and easing payment restrictions. Also, restrictions include incomplete non-financial data for 2020–2023. Future research could integrate Weibull with LSTM or ARIMA, conduct comparative studies, and examine cultural factors.

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Conflicts of Interest

The authors declare that they have no financial or non-financial, personal, professional, or institutional conflicts of interest relevant to this work.

Conflicts of Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Data Availability Statement

The data supporting the findings of this study are available from the corresponding author upon reasonable request.

AI Use Statement

The authors declare that no generative artificial intelligence (AI) or AI-assisted technologies were used in the preparation, writing, or editing of this manuscript.

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Ethics Approval

All procedures performed in this study were conducted in accordance with the ethical standards of the responsible institutional and national research committee.