

Siti Sarah Alyasa-Gan; Norliza Che Yahya

Article

Intended use of IPO proceeds and survival of listed companies in Malaysia

Journal of Risk and Financial Management

Provided in Cooperation with:

MDPI – Multidisciplinary Digital Publishing Institute, Basel

Suggested Citation: Siti Sarah Alyasa-Gan; Norliza Che Yahya (2022) : Intended use of IPO proceeds and survival of listed companies in Malaysia, Journal of Risk and Financial Management, ISSN 1911-8074, MDPI, Basel, Vol. 15, Iss. 3, pp. 1-14,
<https://doi.org/10.3390/jrfm15030145>

This Version is available at:

<https://hdl.handle.net/10419/258868>

Standard-Nutzungsbedingungen:

Die Dokumente auf EconStor dürfen zu eigenen wissenschaftlichen Zwecken und zum Privatgebrauch gespeichert und kopiert werden.

Sie dürfen die Dokumente nicht für öffentliche oder kommerzielle Zwecke vervielfältigen, öffentlich ausstellen, öffentlich zugänglich machen, vertreiben oder anderweitig nutzen.

Sofern die Verfasser die Dokumente unter Open-Content-Lizenzen (insbesondere CC-Lizenzen) zur Verfügung gestellt haben sollten, gelten abweichend von diesen Nutzungsbedingungen die in der dort genannten Lizenz gewährten Nutzungsrechte.

Terms of use:

Documents in EconStor may be saved and copied for your personal and scholarly purposes.

You are not to copy documents for public or commercial purposes, to exhibit the documents publicly, to make them publicly available on the internet, or to distribute or otherwise use the documents in public.

If the documents have been made available under an Open Content Licence (especially Creative Commons Licences), you may exercise further usage rights as specified in the indicated licence.



<https://creativecommons.org/licenses/by/4.0/>

Article

Intended Use of IPO Proceeds and Survival of Listed Companies in Malaysia

Siti Sarah Alyasa-Gan  and Norliza Che-Yahya * 

Faculty of Business and Management, Universiti Teknologi MARA, Kampus Puncak Alam, Puncak Alam 42300, Selangor, Malaysia; sitisarahgann@gmail.com

* Correspondence: norliza9911@uitm.edu.my

Abstract: In the context of Malaysian companies' survival, the potential role of intended use of proceeds as an influential factor remains unfamiliar. This study examines the link between the intended use of IPO proceeds and the survival of 423 Malaysian listed companies over the period of 2000–2014. This study distinguishes the use of IPO proceeds into three segregations: growth opportunities, debt repayment, and working capital. Employing the Accelerated Failure Time (AFT) survival model, the overall evidence shows a statistically significant effect of the intended use of IPO proceeds for growth opportunities and debt repayment on companies' post-IPO survival. Furthermore, company survival was found to be consistently improved when they allocated less than 50% of their IPO proceeds, regardless of the purposes (growth, repay debt or general). These results highlight the importance of the intended use of IPO proceeds on the survival of newly listed companies, and provide insights for policymakers on the management of IPO proceeds for long-term survival.



Citation: Alyasa-Gan, Siti Sarah, and Norliza Che-Yahya. 2022. Intended Use of IPO Proceeds and Survival of Listed Companies in Malaysia.

Journal of Risk and Financial Management 15: 145. <https://doi.org/10.3390/jrfm15030145>

Academic Editors: Xiaofei Pan, Philip Sinnadurai and David Roubaud

Received: 25 January 2022

Accepted: 15 March 2022

Published: 18 March 2022

Publisher's Note: MDPI stays neutral with regard to jurisdictional claims in published maps and institutional affiliations.



Copyright: © 2022 by the authors. Licensee MDPI, Basel, Switzerland. This article is an open access article distributed under the terms and conditions of the Creative Commons Attribution (CC BY) license (<https://creativecommons.org/licenses/by/4.0/>).

Keywords: initial public offerings; survival; intended use of IPO proceeds; Malaysian market; Accelerated Failure Time model

1. Introduction

A challenge that companies may face in times of systematic change through the process of IPO is the length of time that they can survive as public listed companies (Serio et al. 2020). Across countries, policymakers, regulators and investors seek to identify when and why IPO companies fail to survive post-IPO (Espenlaub et al. 2016). For either voluntary (conversion to a private firm, or merger and acquisition) or involuntary reasons (unfulfilled listing requirements or forced liquidation) (Pour and Lasfer 2013; Helbing 2019; Shari 2019), public listed companies aim to remain viable and sustainable post-IPO.

This study discusses an actual issue about the declining trend of total listed companies in the Malaysian market since 2006, particularly among the Main Market participants (Figure 1). While Bursa Malaysia (2021) highlights that the benchmark index¹ of the Malaysian stock market performance relies on the performance of the Main Market participants, this study postulates that a continuous decline in the number of Main Market participants may portray the stock market's underperformance. The stock market's underperformance may discourage investors from making potential investments (Luo 2009), negatively affecting the remaining listed companies. This may lead to a potential negative impact on their long-term performance and ability to survive.

Furthermore, this study observes² that more than 90% of failing companies from Figure 1 are either companies that have failed to comply with the listing requirements (default in payment of loans) or companies with poor financial conditions and operating performance. The remaining are those who have voluntarily delisted themselves from the stock market. Rationally, with a high percentage of companies failing due to unfavourable reasons, this study acknowledges the implication that a continuous decline in Malaysian

companies’ survival could be detrimental to the stock market. In fact, on average, the shortest survival of companies³ that were inactive due to unfavourable reasons in the Malaysian market was below 12 months from 2000 to 2020. Therefore, academically, this study suggests the need to find out the influential factors of companies’ survival post-IPO.

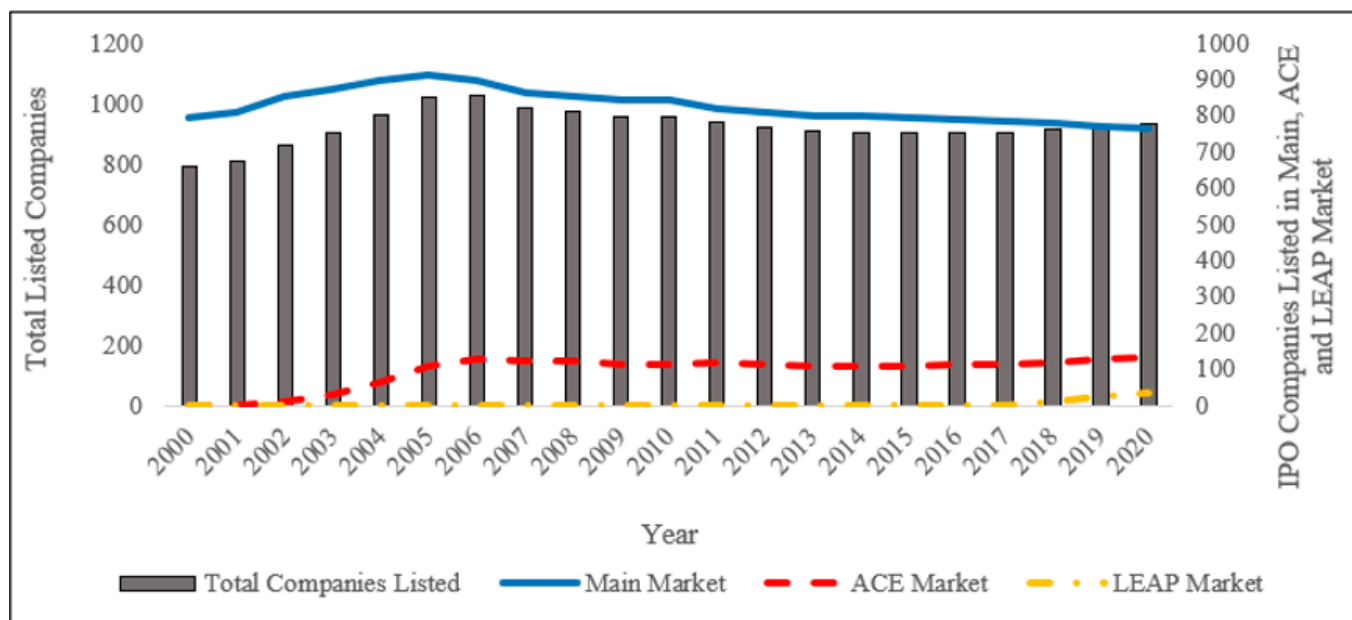


Figure 1. Listed companies in all three markets of Bursa Malaysia (Main Market, ACE Market and LEAP Market). Source: Bursa Malaysia (2021).

This study explores the potential role of companies’ intended use of IPO proceeds as a predictive factor for their survival in the Malaysian market. Such information has been adopted in the context of IPO underpricing (Leone et al. 2007) and IPO aftermarket performances (Andriansyah and Messinis 2016; Ahmad-Zaluki and Badru 2020; Chin-Chi 2020). Nevertheless, the information has not been exploited in the context of IPO survival. This study builds on Wyatt (2014), as well as Amor and Kooli (2017), who have highlighted the potential role of IPO proceeds on companies’ survival in the Australian and the United States markets, respectively. No studies have been found to have examined the role of IPO proceeds on Malaysian-listed companies’ survival.

In the case where information on the intended use of IPO proceeds is disclosed with greater transparency, companies can seize the opportunity to gain investors’ confidence and release credible signals to the public on their IPOs (Kao and Chen 2020). This information disclosure about how the raised IPO proceeds are utilized can transmit information on the future directions of the company. Companies that are transparent in their information disclosure portray an atmosphere of controllable agency conflict that results in better performance in the long run (Varghese et al. 2020). Thus, a company’s disclosure of the intended use of their proceeds is arguably a compelling piece of information to estimate their survival post-IPO.

The Securities Commission of Malaysia (SCM) requires IPO companies to disclose the intended use of IPO proceeds in their prospectuses to promote higher market transparency for investors’ protection. The information that specifies the companies’ intentions for public listings can be retrieved from the company’s prospectus, disclosed a few days before the company’s listing day under the section “utilization of proceeds” or “use of proceeds”. Information disclosed by companies on their IPO proceeds can assist investors to make informed decisions. IPO proceeds are usually raised for growth opportunities, debt repayment, and working capital in the Malaysian IPO market. The intended use of IPO proceeds allocated for growth opportunities is indicated as a company priority (Abdul

Rahman and Che-Yahya 2019). Growth opportunities refer to a company's ability to expand in the market, in which proceeds are allocated to activities promoting the future growth and wealth of the company (Abdul-Rahim and Che-Embi 2013; Tajuddin et al. 2016). Other categories, such as the intended use of IPO proceeds for debt repayment and working capital, tend to contract the survival of these companies. Repayment of debt, usually anticipated in rebalancing capital structure, will not attract investors' attention to buy the marketed shares, due to the anticipated flat future cash flow stream (McGuinness 2019). Similarly, the IPO proceeds intended for working capital, regarded as unspecified company plans, will increase uncertainty among investors on the company's survival (Ljungqvist and Wilhelm 2003). Regardless of these categories, companies' early disclosure of information found in the prospectus has great potential to act as a predictive role for early warning signals when examining companies' survival.

This study employs 423 companies listed in the Malaysian market from 2000 to 2014. Using the Kaplan–Meier (K-M) survival model, this study found a 53.18% survival rate and a 101-month median survival time for Malaysian listed companies for at least seven-years post-IPO. Further analysis showed that companies with lower than 50% of intended use of IPO proceeds for all categories (growth opportunities, debt repayment and working capital) had a longer median survival time, ranging from 104 months to 106 months. The regression result using the Accelerated Failure Time (AFT) model confirmed a statistically significant association between the intended use of IPO proceeds and companies' survival. Companies with a higher intention to grow and repay their debts negatively signal towards survival due to cash flow volatility.

Overall, the results provide insight for policymakers regarding the importance of IPO proceed information on companies' survival. This study also expects to shed some light on (long-term) investors to make informed investment strategies. The rest of this paper discusses the related literature review, data and methodology, findings, and conclusion of the study.

2. Literature Review

2.1. Survival of Companies

Collectively, surviving companies can be defined as those with active status and ultimate performance post-IPO. Surviving companies should have the ability to fulfil the listing requirements continuously while convincing investors of their prospects (Schultz 1993). In other words, companies are not to be indicated as surviving companies simply from the status of "actively trading" as an assurance to the investors of the company's survival. An upward trend in the share price of continuously traded companies is also an indicator of survival (Hensler et al. 1997). Companies with a current share price at par or higher than the IPO-offer price, or its first-day market price, can also be classified as surviving companies (Hensler et al. 1997).

Peristiani and Hong (2004) suggested that surviving companies should portray a healthy financial performance (positive return on assets) as a sign of the company's viability post-IPO. Espenlaub et al. (2016) and Shari (2019) mentioned that surviving companies also go through market transferral. The studies argued that since it is challenging for companies to qualify their listing in a primary or competitive listing market during the exercise of IPO, companies will perform at their best level to receive approval from policymakers for market transferral (from ACE Market to Main Market). This indicates that continuously traded companies will have to be at their best state for the market transferral to convince policymakers of their capabilities.

Schultz (1993) found that initial return significantly and positively influences companies' survival in the U.S. market. Hensler et al. (1997) found companies' characteristics—size, age, insider ownership, initial return, and IPO activity level—can extend companies' survival. Accordingly, Jain and Kini (2000) postulated that the presence of VCs increases the chance of companies surviving longer post-IPO. Since VCs aid in offering growth to high-tech companies, investors receive a positive signal to consider such companies in

their investment portfolio (Hamza and Kooli 2010). In the United Kingdom, Ahmad and Jelic (2014) examined companies' survival based on lockup agreement information. As a voluntary lockup reflects the founders' commitment to the company, founders' action to proceed with longer lockup periods implies that they are confident with their prospects (Ahmad and Jelic 2014). The study clarifies that a longer lockup period results in companies' longer survival post-IPO due to a low agency problem.

There are only a few studies on the developing market. Zhang et al. (2018) examine the Chinese market and argue that the offerings of a new product to the market and the acceptance of the new product play a significant role in ensuring the survival of high-tech companies in the Chinese market. Zhang et al. (2018) posit that studies should also examine how high-tech companies perform despite generalizing sectoral risk to confirm the actual survivability of high-tech companies. In the Malaysian market, Shari (2019) examined the survival of 352 companies from 2002 to 2010, limited only to descriptive analysis. The study focused on describing the survival rate of companies without considering any influential factors to the survival of companies listed in the Malaysian market.

Ahmad et al. (2021) examined 943 companies listed in the Malaysian market from 1990 to 2017. The study found share premium and listed capital to lower the failure risk (suggesting a higher survival probability). In contrast, the company's size and risk increases failure risk (lowering the survival probability). The study infers that the over-optimism of investors for newly listed companies in the Malaysian market enables companies to set higher price premiums and issue higher listed capital so that companies have a higher chance of surviving post-IPO. Therefore, due to the scarcity of examining survival in the developing Malaysian market, it is inevitable for this study to be conducted.

Apart from all the significant factors mentioned, this study is interested in another possible determinant, the intended use of IPO proceeds. As per this study's limited knowledge, Amor and Kooli (2017) as well as Wyatt (2014) are the only studies considering the proportion of IPO proceeds to several activities for explaining the survival of companies in developed markets. Additionally, this study intends to fill in this gap by contributing to the literature on company survival, specifically in the Malaysian market.

2.2. Intended Use of IPO Proceeds and Survival of Companies

Commonly, there are three primary IPO proceed allocation categories that companies usually subdivide in the prospectus⁴ for their public listings. They are growth opportunities, repayment of debts, and financing on working capital (Badru 2021). In an IPO market, investors usually favour companies with motives similar to their objectives. Investors' are more favourable to new offerings with motives catering to investment reasons than offerings with unspecific information and general corporate purposes, such as working capital (Balatbat and Bertinshaw 2008). Varghese et al. (2020) posited that companies should make wise decisions by prioritizing investments to create company value and raise enough capital to meet the listing requirements. Companies must have the capacity to manage their investment projects effectively, or else prioritizing investments may adversely affect their success (Andriansyah and Messinis 2016). In return, if the investment amount is paid back positively, it will give a positive signal to the investors on the company's future value and present the company with a higher ability to survive for longer post-IPO. However, a high proportion of IPO proceeds for growth opportunities is also relative to high cash flow volatility, due to the time-varying effect (Wyatt 2014; Ahmad-Zaluki and Badru 2020). Investors view growth opportunities as a negative signal, as they are more concerned about the companies' ability to create value from their capital expenditure in the long run. Thus, IPO proceeds to growth can negatively affect companies' survival post-IPO.

Hypothesis 1 (H1). *Intended use of IPO proceeds for growth opportunities is positively related to the survival of companies.*

A significant portion of IPO proceeds can also be for the repayment of debt. Although debt repayment is an essential motivation for companies to help reduce their interest burden, investors expect the raised proceeds to be directed more towards profitable projects for their future growth (Fan 2019). The common understanding of debt repayment destabilizes companies' capital structure, and flattens future cash inflow. This gives negative signals to investors, and hence leaves an unfavourable impact on company survival. Paleari et al. (2008) also reported that the main reason for Italian companies to have survival issues is that most companies declare debt repayment as their primary allocation for the intended use of IPO proceeds. Although companies' initial intentions are to lower the companies' cost of credit, the repayment of debt does not endure in the long run, as companies tend to access further debt after the IPO, putting them at higher risk. Valaskova et al. (2021) confirmed that companies with higher than 53% debt will have negatively affected future success. Likewise, this leads to shorter company survival post-IPO.

Hypothesis 2 (H2). *Intended use of IPO proceeds for debt repayment is negatively related to the survival of companies.*

Often, companies that prioritize their intention to working capital have no clear direction on how the raised IPO proceeds will be utilized (Balatbat and Bertinshaw 2008). As that the intended use of IPO proceeds for working capital is indicated as unspecified activities, the information given may be scarce. Leone et al. (2007) accentuated working capital's reference as being too general for investors to be highly confident in the company's survival profile. As such, companies tend to limit the intended use of IPO proceeds for working capital as protection for investors' interests and company survival post-IPO (Wyatt 2014). Similarly, companies can experience unfavourable outcomes post-IPO from allocating a high portion of their IPO proceeds to working capital (Amor and Kooli 2017). Based on the evidence mentioned above, this study hypothesizes:

Hypothesis 3 (H3). *Intended use of IPO proceeds for working capital is negatively related to the survival of companies.*

Several other determinants found to be significant to companies' survival in past studies and also worth looking into are initial performance, quality of the company, risk of the company, shareholder retention, and market sentiment (Kooli and Meknassi 2007; Hamza and Kooli 2010; Lamberto and Rath 2010; Chancharat et al. 2012; Espenlaub et al. 2012; Neneh and Smit 2014; Pour 2015; Baluja and Singh 2016; Espenlaub et al. 2016; Ahmad et al. 2021).

3. Data and Methodology

3.1. Data and Sources

The population in this study comprised all IPO companies issued in the ACE and Main Market from 2000 to 2014. This study ended its sample period in August 2014 to cater for the seven-year observation of companies' survival until the end of August 2021 (the latest observation period this study can cover). There were 527 companies, pre-exclusion. This study excluded 26 companies offered by Real Estate Investment Trusts (REITs), financial institutions, and insurance companies due to the financial statement format of presentation and regulatory framework differences. This study also excluded another 78 companies with outliers and missing values, making the final sample of this study 423 companies.

The data for companies' survival were hand-collected and acquired from the companies' announcements on the Bursa Malaysia website (Chapter 8 of Continuing Listing Obligations for Main and ACE Markets). For instance, companies that default on loan payments are indicated as non-surviving companies. The data for each category (growth opportunities, debt repayment, and working capital) of the intended use of proceeds were also hand-collected and extracted from the company's prospectus under the section titled

“Use of Proceeds” or “Utilization of Proceeds”. Other data from the company’s prospectus were IPO offer price, the total number of shares issued, the total number of shares outstanding and demanded, company sector, and listing year. Data for first-day closing price were acquired from the Thomson Reuters Eikon Datastream database.

3.2. Measurement of Variables

Companies’ survival is the dependent variable of this study. This study defines surviving companies as those that are actively trading and are at their ultimate performance post-IPO. Companies encountering any hiccups⁵ along their journey as listed companies are indicated as non-surviving companies. Company survival is the company’s time-to-survive, which is the duration from the company’s listing date until the end time that they have survived, expressed in months (Cleves et al. 2016). Additionally, the estimation of companies’ survival times included observations of censored data. Thus, using a binary variable was also necessary to denote whether an observation was a censored observation or not. According to Espenlaub et al. (2016), company survival time is often right-censored, which means that the endpoint of the survival is unobserved (covers only until the end of the observation period). In measuring companies’ survival time, this study was required to include not only companies’ time to survive, but also the binary variable (“1” or “0”). Step 1 and Step 2 show the estimation of companies’ survival time.

Step 1: Survival time of *i*th Company

$$ST_i = (t_{1i} - t_{0i}) \quad (1)$$

where:

ST_i = survival time of *i*th Company

t_{1i} = last month of survival observation for *i*th Company

t_{0i} = listing date (or month) of *i*th Company

Step 2: Denotation of the censored observation

$$D^{\text{Survive}}_i = \begin{cases} 1 & | \text{ Censored} \\ 0 & | \text{ Non-Censored} \end{cases}$$

where:

D^{Survive}_i = censored data of *i*th Company using dummy survive

This study further examined the variation of companies’ survival time using the intended use of IPO proceeds, categorized as growth opportunities (GROPP), debt repayment (DERE), and working capital (WOCA), expressed in %age. This study acknowledges the inclusion of other determinants worth noting and found to be commonly significant in past studies. They are initial performance (INPER), quality of company (QUALITY), risk of the company (RISK), shareholder retention (RETAIN), and market sentiment (MARSEN) (Kooli and Mekkassi 2007; Pour and Lasfer 2013; Abdul Rahman and Che-Yahya 2019; Mohd-Rashid et al. 2019). The measurement summary of the independent variables adopted in this study is presented in Table 1.

Table 1. Summary of Measurements for Independent Variables.

No.	Variables	Notation	Definition	Measurements
1.	Growth Opportunities	GROPP	IPO proceeds for growth activities (%)	$= \frac{GROPP_i}{TOTPRO_i} \times 100$
2.	Debt Repayment	DERE	IPO proceeds for relieving, reducing or retiring indebtedness (%)	$= \frac{DERE_i}{TOTPRO_i} \times 100$
3.	Working Capital	WOCA	IPO proceeds for working capital and daily activities (%)	$= \frac{WOCA_i}{TOTPRO_i} \times 100$
4.	Initial Performance	INPER	Initial return (%)	$= \frac{POPEN_i - POFF_i}{POFF_i} \times 100$
5.	Risk of Company	RISK	Offer Size (Ln)	$= [Ln_i(NOSI_i \times POFF_i)]$
6.	Quality of Company	QUALITY	Oversubscription Ratio (times)	$= \frac{Subscription_i}{NOSI_i}$
7.	Shareholder Retention	RETAIN	Insiders' ownership (%)	$= \frac{PRESHARE_i - OFFSALE_i}{PRESHARE_i + ISSUE_i} \times 100$
8.	Market Sentiment	MARSEN	Dummy Hot ("1" or "0")	$= IF, NOSL_t \geq ANOSL_t = "1"$ $IF, NOSL_t < ANOSL_t = "0"$

Notes: ANOSL = average number of shares issued in *t* listing year; ISSUE = newly issued shares; NOS = total number of shares outstanding; NOSI = total number of shares issued; NOSL = total number of shares issued in *t* listing year; OFFSALE = offer for sale shares; PCLOSE = closing price; POFF = offer price; PRESHARE = number of pre-IPO owners' shares; TOTPRO = total IPO proceeds.

4. Methodology

The Kaplan–Meier (K-M) survival analysis model is a preferred test to describe companies' survival rates, as it holds no assumption on the normality of data. This study adopted the K-M model for its preliminary analysis. The survival rates of the samples in the dataset, which included the censored observation (right-censored) were measured non-parametrically (non-normality of data). Following [Ahmad and Jelic \(2014\)](#) as well as [Baluja \(2018\)](#), this study analysed the survival rate in an overall outlook (full sample) and by the stratification of its main independent variables. In this case, the K-M survival rates were stratified by each IPO proceed category (GROPP, DERE, WOCA), grouped to be below 50% and above 50%, for a seven-year observation period. Equation (1) defines the K-M model.

$$S(t_i) = S(t_{i-1}) \left(\frac{n_i - d_i}{n_i} \right) \tag{2}$$

where:

$S(t_i)$ = probability of surviving in month t_i .

$S(t_{i-1})$ = probability of surviving in month t_{i-1} .

n_i = sample size at the month beginning t_i .

d_i = number of sample non-surviving at the month t_i .

This study tested its hypotheses using the Accelerated Failure Time (AFT) model. In ensuring that the estimation of companies' survival time was consistent, the survival distribution needed to be specified (Weibull, exponential, log-normal, or log-logistics). This study also employed the Akaike Information Criterion (AIC) test in identifying the better-fit model with the lowest AIC value.

Typically, the AFT model is expressed in terms of a log-linear function in which the survival time is transformed into the natural logarithm ([Bradburn et al. 2003](#); [Hensler et al. 1997](#)). In the AFT model, the exponential estimated coefficient $\exp(\sum \beta_i X_i)$ acts as an 'acceleration' or 'deceleration' factor, whereby the effect of the independent variable acts to elongate or shorten the length of the survival time. The AFT regression model for this study is specified as follows:

$$Ln(ST_i) = \alpha + \beta_1 GROPP_i + \beta_2 DERE_i + \beta_3 WOCA_i + \beta_4 INPER_i + \beta_5 RISK_i + \beta_6 QUALITY_i + \beta_7 RETAIN_i + \beta_8 MARSEN_i + \varepsilon_i \tag{3}$$

where:

$Ln(ST)$ = natural logarithm of time-to-survive (in months)

i = *ith* company

α = constant term
 β = coefficient of the respective independent variable
 GROPP = growth opportunities
 DERE = debt repayment
 WOCA = working capital
 INPER = initial performance
 RISK = risk of company
 QUALITY = quality of company
 RETAIN = shareholders retention
 MARSEN = market sentiment
 ε_i = error term

5. Results

5.1. Variance Inflation Factor

Table 2 presents the variance inflation factors (VIFs) to address the multicollinearity issue. The value of VIFs ranged from 1 to 2, reporting a moderate correlation between the independent variables adopted. Following Ahmad et al. (2021), the cut-off point indicating a severe multicollinearity issue was the value of 5. Since Table 2 portrays no VIFs exceeding the cut-off point, no severe multicollinearity issue existed between the predictors employed in this study.

Table 2. Variance Inflation Factors.

Variables	VIF	1/VIF
GROPP	2.39	0.4177
DERE	1.90	0.5251
WOCA	1.78	0.5613
INPER	1.27	0.7878
RISK	1.44	0.6928
QUALITY	1.30	0.7670
RETAIN	1.04	0.9632
MARSEN	1.15	0.8670

5.2. Kaplan–Meier Survival Estimates

Equation (1) estimates the companies’ survival rates over the observation period of seven years, from 2000 to 2014, between the full sample (Panel A) and categories of IPO proceeds (Panel B). The survival rates across panels varied substantially. Referring to Panel A of Table 3, out of 423 companies, a total of 18.2% of companies faced difficulties in remaining as surviving companies, leaving 81.80% of companies surviving in the first year post-IPO. The survival rates gradually declined in the second year at 74.23%, third year at 69.03%, fourth year at 62.88%, fifth year at 56.25%, and sixth year at 56.26% in the Malaysian market. Seven years post-IPO exhibited that almost half (53.18% survival) of the companies in the Malaysian market could not survive more than seven years of listing. Specifically, the finding shows that it took 101 months for half of the companies in this study’s sample to be non-surviving companies post-IPO. In comparison, the survival rate of companies reported is relatively lower than those in the Malaysian market reported by Shari (2019), at 86.80% seven years post-IPO. It is also lower than in the 32 countries reported by Espenlaub et al. (2016), at 78% five years post-IPO.

Table 3. Survival Rates of Companies Post-IPO.

Categories	No. of Companies	Cumulative Survival Rates (%)							ST Median (50%)
		Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	
Panel A: Full Sample									
Total	423	81.80	74.23	69.03	62.88	59.81	56.26	53.18	101
Panel B: Category of IPO Proceeds									
Growth Opportunities									
(0–50%)	248	83.06	73.79	71.37	64.11	60.89	58.06	55.24	104
(51–100%)	175	80.00	74.86	65.71	61.14	58.29	53.71	50.27	90
Debt Repayment									
(0–50%)	374	81.28	74.06	68.45	62.83	59.63	56.42	53.73	104
(51–100%)	49	85.71	75.51	73.47	63.27	61.22	55.10	48.98	82
Working Capital									
(0–50%)	308	81.17	76.30	70.13	64.61	61.69	57.79	54.86	106
(51–100%)	115	83.48	68.70	66.09	58.26	54.78	52.17	48.70	81

Notes: This table shows the cumulative survival rates of companies listed from 2000 to 2014 using the Kaplan–Meier survival analysis model for seven years of observation. Panel A reports the survival rates of a full sample of companies included in this study (423 companies) and Panel B across different categories of the intended use of IPO proceeds (above 50% and below 50%). This table reports the survival time (ST) median in months. Following [Ahmad and Jelic \(2014\)](#), this study uses 50% for the ST to show how long (in months) the companies fall below 50% post-IPO.

Noticeable in Panel B of Table 3, this study breaks down companies’ survival rates and times by different categories of IPO proceeds (allocation of IPO proceeds below 50% and IPO proceeds above 50% for each category). The survival rates of companies in GROPP, DERE, and WOCA were consistently higher for the allocation of IPO proceeds to each category that was lower than 50% compared to those with IPO proceeds higher than 50% in the seventh year post-IPO. For instance, the survival rate of companies with the allocation of GROPP below 50% was continuously higher than the allocation above 50% throughout the seven-year observation period. In comparison, IPO proceeds intended for DERE showed that companies’ survival rates of more than 50% were moderately higher for the first two years post-IPO. Subsequently, this became lower than the allocation of IPO proceeds to DERE below 50% throughout the remaining five years. Similarly, IPO proceeds intended for WOCA showed that companies with less than 50% of WOCA had higher survival rates from the second year to the seventh year post-IPO. This study also discovered that companies with the intended use of proceeds lesser than 50% for all categories experienced higher survival times by 14 months to 23 months. Statistically, this shows that limiting the distribution of intended use of IPO proceeds to each category is crucial for companies’ survival in the long run. Overall, Table 3 supports the importance of examining the intended use of IPO proceeds on companies’ survival listed in the Malaysian market.

5.3. Multiple Regression Analysis Using AFT Model

Using Equation (2), Table 4 reports inferential statistics by employing the AFT model for companies listed in the Malaysian market from 2000 to 2014. This study selected Weibull distribution based on the lowest AIC value among other distributions⁶ at 810.79. Overall, this model included reasonable determinants, measured by the Link test *p*-value of 0.85. In line with [Asteriou and Hall \(2011\)](#), a *p*-value above 0.05 indicates a correctly specified model.

Table 4. Accelerated Failure Time Model (Weibull Distribution).

Variables	Time Ratio	p-Value	Coefficient
GROPP (%)	0.9960	0.05	−0.0040 **
DERE (%)	0.9963	0.09	−0.0037 *
WOCA (%)	0.9976	0.26	−0.0024
INPER (%)	1.0022	0.01	0.0022 **
RISK (Ln)	1.0008	0.98	0.0008
QUALITY (times)	0.9986	0.04	−0.0014 **
RETAIN (%)	0.9946	0.10	−0.0054 *
MARSEN (D)	0.7424	0.00	−0.2979 ***
Constant	12.6981	0.00	2.5414
Akaike Information Criterion	810.79		
Log-likelihood	−395.39		
Time at Risk	1682.86		
Observations	423		
Link test (hatsq p-value)	0.85		

Notes: This table shows the estimation results of the Accelerated Failure Time (AFT) model. The time ratio is the exponential coefficients, $\exp(\beta)$, measuring each independent variable’s acceleration and deceleration factor to the survival time. A time ratio of below (above) 1 indicates that an increase in the independent variable decreases (increases) the survival time. ***, ** and * indicate statistical significance at 1%, 5% and 10% level, respectively.

The coefficient on the GROPP is negative and significant, with a p-value of 0.05. The time ratio of 0.9960 associated with the GROPP means that, for a 1 % increase in GROPP, the survival time (ST) decelerates by 0.4% (100–99.60%). In contrast to Hypothesis 1, this study found a significantly negative relationship between GROPP and ST at a 5% significant level, suggesting that companies prioritizing GROPP will shorten ST.

DERE also showed a negatively significant influence on companies’ survival time, with a p-value of 0.05. A 1% increase in DERE decelerates survival time by 0.37%. This is in line with Hypothesis 2, whereby a higher intended use of IPO proceeds for debt repayment will shorten ST. No association is predicted between WOCA and ST.

This study also controlled for INPER, RISK QUALITY, RETAIN and MARSEN when examining the role of the intended use of IPO proceeds on the survival of companies post-IPO. Higher INPER positively affected the ST with a p-value of 0.01. A 1% increase in initial performance accelerated ST by 0.2% (1.0022–1). Surprisingly, this study found RETAIN to be significant and negatively affect ST post-IPO at a p-value of 0.10. A 1% increase in RETAIN decelerated companies’ survival time by 0.54%. MARSEN was also significant at a 1% level, and negatively influenced companies’ survival time post-IPO. A 1% increase in MARSEN decelerated ST by 25.76%. Additionally, this study was unable to produce a significance between RISK and ST.

6. Discussion

This study highlights that it is vital to know that companies’ survival rates vary according to the definition of surviving companies each study individually adopts. Accordingly, Panel A in Table 3 reports lower company survival rates than those found in other markets due to the consideration of companies that failed to adhere to listing requirements as non-surviving companies. Thus, the definition of surviving companies in past studies to that of surviving companies applied in this study is dissimilar. From Panel B, this study infers that companies are advised to limit their IPO proceeds below 50% for longer survival post-IPO, regardless of the category.

The AFT model confirms that the intended use of IPO proceeds can predict companies’ survival. Table 4 reports a significant and negative influence of GROPP on ST. Higher intended use of IPO proceeds for GROPP creates uncertainty on the companies’ long-term cash flow volatility, leading to a shorter survival time. Similar to the findings in Wyatt (2014), although GROPP is associated with activities to expand the business and capital expenditure, creating value for the companies remains uncertain in the long run. Kim and Weisbach (2008) also emphasized that companies going public for growing activities usually

benefit from mispricing, signalling poor post-IPO performance. The negative association between GROPP and companies' survival could result from this study considering research and development (RandD) to be one of the elements to estimate GROPP. In line with [Ahmad-Zaluki and Badru \(2020\)](#), investors do not view RandD as an ex-ante factor to invest, accentuating the conflict of interest between parties. The study highlights that investors are more concerned about the prospects of RandD in the long run; hence, demotivating them to participate in such issuance. Thus, a higher allocation of GROPP shortens companies' survival time post-IPO.

Table 4 reports a significant and negative influence of DERE on ST. Referring to [McGuinness \(2019\)](#) as well as [Ahmad-Zaluki and Badru \(2020\)](#), DERE will flatten the future cash flow stream, signalling an unfavourable survival post-IPO. This study produces similar evidence to [Amor and Kooli \(2017\)](#) that companies intending to use their IPO proceeds preferably for debt repayment are viewed as opportunistic to the market. Although the primary intention for DERE is to reduce the credit risk, companies tend to access further financing in the future, especially larger companies. A similar scenario can be identified in the Malaysian market, with 93% of companies having more than 50% of DERE coming from the Main Market participants. Putting companies at a higher risk jeopardizes the flexibility of the companies in utilizing their capital to create value and generate cash flow, as well as increasing the conflict of interest between investors that acquire higher returns from their investments. As a result, this leads to companies' difficulty to survive long-term post-IPO. Therefore, companies listed in the Malaysian market with the higher intended use of IPO proceeds for DERE experience a shorter ST.

Comparable to [Schultz \(1993\)](#) and [Hensler et al. \(1997\)](#), this study found INPER positively influencing ST. Companies with higher first-day returns exhibited that the market value of companies' future undertakings was larger than what has been pre-anticipated. Companies with higher INPER were better effort companies with additional capital to invest post-IPO, leading to a higher chance of surviving in the long run. Referring to [Abdul Rahman and Che-Yahya \(2019\)](#), companies must perform well at their early stage to sustain themselves in the long run. Accordingly, this study also found it important for companies to have high INPER for an extended ST post-IPO.

In contrast, this study found that RETAIN negatively influenced ST. Usually, in a situation with high information asymmetry, investors will refer to the action and commitment of insiders in order to make their investment strategies ([Mohd-Rashid et al. 2019](#)). However, in the case of ST in the Malaysian market, higher RETAIN leads to shorter ST. This can be supported by an argument made by [Fan \(2007\)](#), that higher RETAIN leads to a higher tendency of manipulation of the companies' value. When insiders are aware of the company's true quality (low quality), they retain their shareholdings in the early stage to portray otherwise. Although this might help with the immediate aftermarket performance, low-quality companies have little chance of surviving long-term post-IPO due to the demanding requirements ([Baluja and Singh 2016](#)). Therefore, companies with lower RETAIN may experience longer ST.

Finally, this study found that MARSEN negatively influenced ST. [Hensler et al. \(1997\)](#) as well as [Kooli and Mknassi \(2007\)](#), argued that opportunistic companies usually decide on their entrance to the market during good market sentiment. Wherever there is a market with over-optimism sentiment among the investors, companies prefer to time their IPO during the hot market condition as opposed the other (cold issue market) for their advantage. Opportunistic companies practise the bandwagon effect to benefit from investors' optimism and gain higher early-listing returns ([Baluja and Singh 2016](#)). However, rough aftermarket condition and high expectations for public listed companies leave the companies struggling to sustain themselves, resulting in a shorter ST in the long run.

7. Conclusions and Recommendations

This study examines the determinants of companies' survival in the Malaysian market using the AFT model. Given the paucity of empirical studies regarding Malaysian compa-

nies' survival, this study used a sample of 423 companies listed from 2000 to 2014. This study leveraged the signalling and agency theory to explain the influence of the intended use of IPO proceeds for growth opportunities (GROPP), debt repayment (DERE), and working capital (WOCA) on companies' survival post-IPO. The signalling and agency theory posits that the intended use of IPO proceeds in the long run transmits information about the extent to which companies can survive post-IPO. A higher amount of IPO proceeds to certain categories (growth opportunities, debt repayment, and working capital) should transmit different information about companies' future directions, and are useful to investors to ensure that their objectives and the company's are aligned in the long run.

This study provides empirical evidence that the information of IPO proceeds disclosed in the companies' prospectus can influence companies' long-term survival post-IPO in the Malaysian market. This study observes that the intended use of IPO proceeds (GROPP and DERE) serves as an ex-ante uncertainty surrounding companies' future success due to the uncertainty of cash flow volatility in the long run. Likewise, companies should strategically allocate the raised IPO proceeds to create value and reduce financing risk for a longer survival time.

It is also worth highlighting that the findings in this study are relevant to interested parties such as policymakers and long-term investors in the survival of companies. This study suggests that it is essential for Bursa Malaysia to look closely at the information available in the prospectus for insights on companies' survival profiles and to monitor their initial planning for future undertakings. Accordingly, SCM may consider encouraging a reduction in raising IPO proceeds for activities with high future cash flow volatility and debt repayment below 50%, while ensuring that the repayments are not made immediately (at least more than 24 months). This study also concludes that the information on IPO proceeds allows investors to select companies that offer favourable long-term investments, specifically those with minimal priorities for activities with high future cash flow volatility and debt repayment. Furthermore, this study highlights that the potential role of the intended use of IPO proceeds on companies' survival is also examinable in other emerging countries (Indonesia, Thailand, and the Philippines) that exhibit similar prospectus guidelines for companies seeking listing. Finally, since this study examined companies' survival seven years post-IPO, it was unable to provide evidence for the survival of recently listed companies in the Malaysian IPO market. Thus, future studies can consider shrinking the observation period of survival from seven to three or five years post-IPO to gain insight into recently listed companies.

Author Contributions: Conceptualization, S.S.A.-G. and N.C.-Y.; formal analysis, S.S.A.-G.; investigation, N.C.-Y.; writing—original draft, S.S.A.-G.; writing—review and editing, N.C.-Y. All authors have read and agreed to the published version of the manuscript.

Funding: This article and the APC are funded by Universiti Teknologi MARA (UiTM), under the MyRA Grant Scheme. Project ID: 600-RMC/MYRA 5/3/LESTARI (038/2020).

Institutional Review Board Statement: Not applicable.

Informed Consent Statement: Not applicable.

Data Availability Statement: Publicly available datasets were analyzed in this study. This data can be found here: [https://www.bursamalaysia.com/listing/listing_resources/ipo/listing_statistic, accessed on 17 January 2021].

Acknowledgments: The authors would like to acknowledge that this article is part of a research project funded by Universiti Teknologi MARA (UiTM) for the MyRA Grant Scheme, file no.: 600-RMC/MYRA 5/3/LESTARI (038/2020).

Conflicts of Interest: The authors declare no conflict of interest.

Notes

- ¹ The Kuala Lumpur Composit Index (KLCI), under the “Selection of FTSE Bursa Malaysia KLCI Constituents” of Bursa Malaysia website.
- ² The information is available in Company’s Announcement, on Bursa Malaysia website.
- ³ Tanah Makmur Berhad has the lowest survival period over the observation of 21 years, at 32 months. The company was listed on 17 July 2014 and delisted on 27 March 2017 from Bursa Malaysia due to corporate proposal. Further information is available in Company’s Announcement, on Bursa Malaysia website.
- ⁴ A prospectus is a primary informational document developed by the IPO issuers containing all information needed for investors to make informed investment strategies (Kecskés and Halász 2015), which it is made compulsory for all companies pursuing for first-time equity offerings. The information required depends on the guidelines provided in the most recent revised SCM Prospectus Guidelines (PG).
- ⁵ In the context of this study, hiccups come from several criteria (insiders possessing lower than 25 % of companies’ equity and companies’ subsidiary asset account for 50 % of the companies’ total assets) triggered by companies to be listed or listed in the Practice Note and Guidance Note.
- ⁶ Other survival distributions reports: Exponential distribution (940.47), Log-normal distribution (872.87), Log-logistics distribution (838.15).

References

- Abdul Rahman, Siti Suhaila, and Norliza Che-Yahya. 2019. Initial and long-term performance of IPOs. Does growth opportunity of issuing firm matter? *Journal of Business and Economic Horizons* 15: 276–91.
- Abdul-Rahim, Ruzita, and Nor Azizan Che-Embi. 2013. Initial Returns of Shariah versus Non-Shariah IPOs: Are There Any Differences? *Jurnal Pengurusan* 39: 37–50. [CrossRef]
- Ahmad, Wasim, and Ranko Jelic. 2014. Lockup Agreements and Survival of UK IPOs. *Journal of Business Finance and Accounting* 41: 717–42. [CrossRef]
- Ahmad, Iftikhar, Izlin Ismail, and Shahrin Saaid Shaharuddin. 2021. Predictive Role of Ex Ante Strategic Firm Characteristics for Sustainable Initial Public Offering (IPO) Survival. *Sustainability* 13: 8063. [CrossRef]
- Ahmad-Zaluki, Nurwati Ashikkin, and Bazeet Olayemi Badru. 2020. Intended use of IPO proceeds and initial returns. *Journal of Financial Reporting and Accounting* 36: 184–210. [CrossRef]
- Amor, Salma Ben, and Maher Kooli. 2017. Intended use of proceeds and post-IPO performance. *The Quarterly Review of Economics and Finance* 65: 168–81. [CrossRef]
- Andriansyah, Andriansyah, and George Messinis. 2016. Intended use of IPO proceeds and firm performance: A quantile regression approach. *Pacific-Basin Finance Journal* 36: 14–30. [CrossRef]
- Asteriou, Dimitrios, and Stephen George Frederick Hall. 2011. *Applied Econometrics*, 2nd ed. London: PALGRAVE MACMILLAN.
- Badru, Bazeet Olayemi. 2021. Decomposition of Intended Use of Initial Public Offering Proceeds: Evidence from Malaysia. *Gadjah Mada International Journal of Business* 23: 76–90. [CrossRef]
- Balatbat, Maria Cleofas, and Scott Bertinshaw. 2008. Use of Proceeds Disclosures in IPO Prospectuses: Do Issuers Come Clean? *The FINISIA Journal of Applied Finance* 2: 17–21.
- Baluja, Garima. 2018. Does Size Matter for IPO Survival? Empirical Evidence from India. *Vision: The Journal of Business Perspective* 22: 88–104. [CrossRef]
- Baluja, Garima, and Balwinder Singh. 2016. The Survival Analysis of Initial Public Offerings in India. *Journal of Advances in Management Research* 13: 23–41. [CrossRef]
- Bradburn, Mike, Taane Clark, Sharon Love, and Douglas Graham Altman. 2003. Survival Analysis Part II: Multivariate Data Analysis: An introduction to concepts and methods. *British Journal of Cancer* 89: 431–36. [CrossRef] [PubMed]
- Bursa Malaysia. 2021. *Selection of FTSE Bursa Malaysia KLCI Constituents*. Kuala Lumpur: Bursa Malaysia.
- Chancharat, Nongnit, Chandrasekhar Krishnamurti, and Gary Tian. 2012. Board Structure and Survival of New Economy IPO Firms. *Corporate Governance: An International Review* 20: 144–63. [CrossRef]
- Chin-Chi, Liu. 2020. Intended Use of Proceeds and Long-run Performance of Reverse Mergers: Evidence from Taiwan. *Journal of Economics and Management* 16: 33–49.
- Cleves, Mario, William Gould, and Yulia Marchenko. 2016. *An Introduction to Survival Analysis Using Stata*, Rev. 3rd ed. College Station: Stata Press.
- Espenlaub, Susanne, Arif Khurshed, and Abdulkadir Mohamed. 2012. IPO Survival in a Reputational Market. *Journal of Business Finance and Accounting* 39: 427–63. [CrossRef]
- Espenlaub, Susanne, Abhinav Goyal, and Abdulkadir Mohamed. 2016. Impact of legal institutions on IPO survival: A global perspective. *Journal of Financial Stability* 25: 98–112. [CrossRef]
- Fan, Qintao. 2007. Earnings Management and Ownership Retention for Initial Public Offering Firms: Theory and Evidence. *The Accounting Review* 82: 27–64. [CrossRef]
- Fan, Pengda. 2019. Debt retirement at IPO and firm growth. *Journal of Economics and Business* 101: 1–16. [CrossRef]

- Hamza, Olfa, and Maher Kooli. 2010. Does Venture Capitalists Reputation Improve the Survival Profile of IPO Firms? *SSRN Electronic Journal*. Available online: https://papers.ssrn.com/sol3/papers.cfm?abstract_id=1857012 (accessed on 17 January 2021).
- Helbing, Pia. 2019. The determinants of IPO withdrawal—Evidence from Europe. *International Review of Financial Analysis* 62: 200–208. [CrossRef]
- Hensler, Douglas, Ronald Rutherford, and Thomas Springer. 1997. The Survival of Initial Public Offerings in the Aftermarket. *The Journal of Financial Research* 20: 93–110. [CrossRef]
- Jain, Bharat, and Omesh Kini. 2000. Does the Presence of Venture Capitalists Improve the Survival Profile of IPO firms? *Journal of Business Finance and Accounting* 27: 1139–76. [CrossRef]
- Kao, Lanfeng, and Anlin Chen. 2020. How A Pre-IPO Audit Committee Improves IPO Pricing Efficiency in An Economy with Little Value Uncertainty and Information Asymmetry. *Journal of Banking and Finance* 110: 105688. [CrossRef]
- Kecskés, András, and Vendel Halász. 2015. The Role of Prospectus Documentation and Prospectus Liability. *Pravni Vjesnik* 31: 167–84.
- Kim, Woojin, and Michael Weisbach. 2008. Motivations for public equity offers: An international perspective. *Journal of Financial Economics* 87: 281–307. [CrossRef]
- Kooli, Maher, and Siham Meknassi. 2007. The Survival of U.S. IPO Issuers 1985–2005. *The Journal of Wealth Management* 10: 105–19. [CrossRef]
- Lamberto, Andre Paul, and Subhrendu Rath. 2010. The Survival of Initial Public Offerings in Australia. *The International Journal of Business and Finance Research* 4: 133–47.
- Leone, Andrew, Steve Rock, and Michael Willenborg. 2007. Disclosure of Intended Use of Proceeds and Underpricing in Initial Public Offerings. *Journal of Accounting Research* 45: 111–53. [CrossRef]
- Ljungqvist, Alexander, and William Jr. Wilhelm. 2003. IPO Pricing in the Dot-com Bubble. *The Journal of Finance* 58: 723–52. [CrossRef]
- Luo, Xueming. 2009. Quantifying the Long-Term Impact of Negative Word of Mouth on Cash Flows and Stock Prices. *Marketing Science* 28: 148–65. [CrossRef]
- McGuinness, Paul. 2019. Risk factor and use of proceeds declarations and their effects on IPO subscription, price ‘fixings’, liquidity and aftermarket returns. *The European Journal of Finance* 25: 1122–46. [CrossRef]
- Mohd-Rashid, Rasidah, Ruzita Abdul-Rahim, and Norliza Che-Yahya. 2019. The Influence of Information Asymmetry on IPO Lock-up Provisions: Evidence from Malaysian Market. *Global Business Review* 20: 613–26. [CrossRef]
- Neneh, Brownhilder Ngek, and Van Aardt Smit. 2014. Determinants of IPO Survival on the Johannesburg Securities Exchange. *Risk Governance & Control: Financial Markers & Institutions* 4: 71–83.
- Paleari, Stefano, Enrico Pellizzoni, and Silvio Vismara. 2008. The Going Public Decision: Evidence from the IPOs in Italy and in the UK. *International Journal Applied Decision Sciences* 1: 131–52. [CrossRef]
- Peristiani, Stavros, and Gijoon Hong. 2004. Pre-IPO Financial Performance and Aftermarket Survival. *Current Issues in Economics and Finance* 10: 1–7.
- Pour, Eilnaz Kashefi. 2015. IPO survival and CEOs’ decision-making power: The evidence of China. *Research in International Business and Finance* 33: 247–67. [CrossRef]
- Pour, Eilnaz Kashefi, and Meziame Lasfer. 2013. Why do companies delist voluntarily from the stock market? *Journal of Banking and Finance* 37: 4850–60. [CrossRef]
- Schultz, Paul. 1993. Unit Initial Public Offerings. *Journal of Financial Economics* 34: 199–229. [CrossRef]
- Serio, Gianluigi Serio, Maria Michela Dickson, Diego Giuliani, and Giuseppe Espa. 2020. Green Production as a Factor of Survival for Innovative Startups: Evidence from Italy. *Sustainability* 12: 9464. [CrossRef]
- Shari, Wahidah. 2019. Survival of the Malaysian Initial Public Offerings. *Management Science Letters* 9: 607–20. [CrossRef]
- Tajuddin, Ahmad Hakimi, Nur Adiana Hiau Abdullah, and Kamarun Nisham Taufil-Mohd. 2016. Does Growth Opportunity Matter in Explaining the Oversubscription Phenomena of Malaysian IPO? *Procedia—Social and Behavioral Sciences* 219: 748–54. [CrossRef]
- Varghese, Ann, Ponnu Sibby, and Kavitha Jayakumar. 2020. IPO Mobilisation and Allocation: An Empirical Analysis. *Mukt Shabd Journal* 9: 3462–72.
- Valaskova, Katarina, Tomas Kliestik, and Dominika Gajdosikova. 2021. Distinctive determinants of financial indebtedness: Evidence from Slovak and Czech enterprises. *Equilibrium* 16: 639–59. [CrossRef]
- Wyatt, Anne. 2014. Is there useful information in the ‘use of proceeds’ disclosures in IPO prospectuses? *Journal of Accounting and Finance* 54: 625–67. [CrossRef]
- Zhang, Dongyang, Wenping Zheng, and Lutao Ning. 2018. Does innovation facilitate firm survival? Evidence from Chinese high-tech firms. *Economic Modelling* 75: 458–68. [CrossRef]