This article contains survey data from 588 firms on 1) their length of survival, 2) technological innovation related information, such as research and development (R&D) investment, research manpower, and the number of patent applications, along with 3) other basic data on firm size and affiliated industry sector. The dataset was extracted from firms residing in three different innovation cluster regions of Korea. All the data in this article are based on firm level questionnaire in the innovation cluster regions, with the exception of the firm survival information extracted from the National Tax Service of Korea and industry information from “Statistics Korea”. The related research article using the current dataset was published under the following title: “Does R&D investment increase SME survival during a recession?” Jung et al., 2018.

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1. Data

The cross-sectional dataset consists of 588 firms that were filtered as participating in multiple surveys during 2008–2014. Firms with fewer than 500 employees are included in the dataset. Even though the data collection in Korea’s innovation clusters began in 2006, the current dataset in this data article only contains collections from 2008, which is due to the associated research [1] demanding the dataset after the 2008 financial crises. The dataset is valuable since it is hard to obtain innovation related information and business closure information together on small and medium enterprises (SMEs). In the case of small firms, researchers can obtain such information only if they are public firms listed on stock market. Each firm’s data contains the descriptive variables shown in Table 1. Table 2 describes the variables that have postfix year-name variables. Each variable in Table 2 has a series of seven variables; for example, Sales 09 means the total firm sales of 2009. The variable constitutes a series from Sales 08 to Sales 14. The dataset of the first supplementary file, described in Table 2, is a specific form of “wide-file” for executing SPSS cox regression with time-varying covariates. According to Guo [2], SPSS and SAS require “wide-file” format where time-varying covariates are organized by several variables. However, STATA requires “long-file” format where each subject occupies more than one data line for varying covariates. For the purpose of sharing dataset with wider academic communities, we provide a separate supplementary file without complex postfix year name. These twin supplementary files constitute main dataset files of this article. In addition, a separate supplementary file (the third supplementary file) on industry concentration and industry growth
Table 1
Description of firm attributes.

| Variables     | Data Type | Content                                                                 |
|---------------|-----------|--------------------------------------------------------------------------|
| Month_Time    | Integer   | Life span as number of months from Dec. 2008, 72 means right censored (survival until Dec. 2014) |
| Event         | Binary    | 0 means closure of business, 1 survival                                  |
| Founding_year | Integer   | Founding year of the firm (at least before 2006)                        |
| KSIC_2_digit  | Integer   | Similar to Standard Industry Code (Korean version revision KSIC 2007 [3]) |
| Region        | Code (1/2/3) | 1 Daeduk, 2 Gwangju, 3 Daegu                                        |

Table 2
Description of attributes of firms that have annual values.

| Variables           | Data Type | Content                                                                 |
|---------------------|-----------|--------------------------------------------------------------------------|
| Number_EmployeeXX   | Count     | Number of firm employees in year 20XX:2008–2014                          |
| SalesXX             | Integer   | Total sales in year 20XX (Unit: million KRW)                             |
| Res_Dev_InvestXX    | Integer   | Total R&D investment in year 20XX                                       |
| Internal_RnD_InvestXX| Integer | Internal R&D investment in year 20XX                                    |
| ResearchPersonnelXX | Count     | Number of researchers in year 20XX                                      |
| Patent_ApplicationXX| Count     | Number of domestic and international patent applications in year 20XX  |
| VentureCertXX       | Binary    | Venture certificate (annual renewal, government acknowledgement of innovative firms) in year 20XX |
| ExportDumXX         | Binary    | Existence of export sales in year 20XX                                  |
| CRXX                | %         | Firm’s associated industry concentration in terms of the top three firms’ market share in year 20XX |
| GRXX                | ratio     | The growth of the firm’s affiliated industry in year 20XX (increment of industry production over the production of the previous year) |

Table 3
Description of a separate spreadsheet on industry.

| Variables            | Data Type | Content                                                                 |
|----------------------|-----------|--------------------------------------------------------------------------|
| KSIC Industry Code   | 2-digit Integer Characters | Korean version of the Standard Industry Code: KSIC revision 2007 The content of the industry in the manufacturing sector |
| Year Categories – GR | 4-digit Integer ratio          | From 2008 to 2014 Annual Industry Growth [Industry Production_i – Industry Production_{i-1}]/ Industry Production_{i-1} |
| Year Categories – CR3| %          | Industry Concentration (CR3)                                               |

during the period is also presented in this data article, and is illustrated in Table 3. Finally, the fourth supplementary file contains exemplary SPSS processing algorithm for survival analysis.

2. Experimental design, materials and methods

Korean government is keen to create a venture ecosystem in innovation cluster regions, and government agencies implement annual surveys and the target sample is all member organisations in the regions. As of December 2016, there are 5018 firms under the designated innovation clusters: 1768 in Daedeok (a region in Daejeon), 1140 in Gwangju, 728 in Daegu, 910 in Busan, and 477 in Jeonbuk. The annual survey started in Daejeon in 2006; Daegu and Gwangju joined the survey in 2011 (obtaining 2010 data). The current dataset of this article is a subset of the survey sample.

Firm selection was based on two criteria: the size of the firm and the multiple responses. Firms with fewer than 500 employees at any time during the survey period — 2008–2014 — were included. The size criteria was chosen with the aim of implementing a potential wider international comparison study in the future (e.g. definitions of manufacturing SMEs: 200 employees in the EU and 500 in the U.S.). As for the
multiple responses, firms with a response frequency of five or more and exit firms with two or more were included in the dataset; this is because the associated research article [1] conducted a survival analysis demanding longitudinal data. There are five innovation clusters under the management of government agencies, but only three innovation clusters were included. The other innovation cluster regions (Busan and Jeonbuk) were excluded due to a lack of data collection before 2013, thus they do not satisfy the condition of multiple responses: five or more participation of the annual survey. Finally, as very young firms are prone to fail, firms with foundation year after 2005 were excluded.

Upon our request of technology and performance related firm questionnaire variables, government agencies of administrating three innovation cluster regions provided the coded survey results on the selected variables, where the identity of individual firm should be unnoticeable. Without special arrangement, the survey data cannot be accessed.

As for processing the dataset, we obtained the export sales and venture certificate statues of individual firms and converted them into dummy variables each year. The standard industry codes of the firms were assigned according to those obtained from the 2012 and 2008 surveys. It contains 2-digit KSIC code [3]. The growth of the industry was obtained from the Korea Statistics Office's website (KOSIS) [4] and followed a simple calculation \((\text{Industry production}_i - \text{Industry production}_{i-1})/\text{Industry production}_{i-1}\). The concentration ratio of the industry was calculated from the three firm concentration ratios (CR3) that appear on Korea Development Institute (KDI)'s biannual “market structure report” under the surveillance of the government (Korea Fair Trade Commission). The report presents the associated CR3 Excel data file at 5-digit sub-industry level in recent two years, so it was possible to

![Fig. 1. The cumulated survival function of firms in innovation clusters.](image1)

![Fig. 2. The cumulated survival function of firms with/without venture certificates.](image2)
calculate 2-digit industry level. Although it is a biannual report, it covers the annual CR3 of the industries.

Korea's National Tax Service (NTS) compiles the closure of businesses and the information is easily accessible through the CRETOP® credit information agency. The exact closure date was obtained but coded monthly in the current dataset to specify the lifespan of each firm.

The essential value of the data lies in the monthly records of firm survival from 2008 to 2014. Upon processing the dataset, survival patterns had been checked alongside the cumulated survival function graphs; the graphs, according to the region and firm status, are presented in Figs. 1 and 2, respectively.

Basic statistics of closed (exit) firms vs. survived firms is presented in Table 4. The closed 58 SMEs are smaller and lower in technological activities, when compared with survived 530 SMEs. The dataset summarized in Table 1 was prepared for “SPSS cox regression with time varying covariates”, where time varying covariates were organized as several variables.

The major utility of “wide format” dataset of Table 2 is as follows. After loading dataset into SPSS, a time program code, SPSS script file, similar to those used for the related research article [1], was constructed following the method of tutorial [5], and had been executed. Table 5 presents exemplary survival regression output from the SPSS script. We can observe that size (positive impact) and industry concentration (negative impact) are the most important for the SME survival amongst four variables. The script for exemplary analysis of Table 5 is also provided in a separate supplementary file (DiB_coxreg.sps in the zip file) in this data article.

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**Transparency document**

Transparency document associated with this article can be found in the online version at https://doi.org/10.1016/j.dib.2019.103967.
Appendix A. Supplementary data

Supplementary data to this article can be found online at https://doi.org/10.1016/j.dib.2019.103967.

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