

On the Timing of Pivots: Jumping the Gun or Late Out of the Gate?

Ellen Thomas
Martin Tuchman School of Management
New Jersey Institute of Technology
ellen.thomas@njit.edu

Cesar Bandera
Martin Tuchman School of Management
New Jersey Institute of Technology
bandera@njit.edu

Abstract

Startup literature has demonstrated a growing interest in topics related to strategic pivots however very little is known about the impact pivoting has on new venture survival and many aspects remain unexplored. While some studies treat pivots as though there are no tradeoffs involved, others suggest pivoting has either positive or negative effects. This paper seeks to better understand the impact of pivoting, namely does the timing of pivoting impact startup survival.

Using change in a venture's North American Industry Classification System code as a proxy for pivoting, we find that earlier pivoting activity has a more positive impact on survival than later pivoting activity among Kauffman Firm Survey participants. This longitudinal empirical study on the relationship between pivot timing and revenue aims to attract attention to this important topic in startup literature, and help the entrepreneur facing the difficult decision of when to pivot.

1. Introduction

The success of any startup rests on its ability to pivot at the right time, for the right reasons, after recognizing the right signs. Although the term “pivot” is widely used by practitioners and scholars alike, it is often ill-defined. Pivot was first coined in 2009 in the context of Lean Startup literature and was originally described as “a structured course correction designed to test a new fundamental hypothesis” [1] (pg 149). More recently scholars have suggested the term suffers from a proliferation of meanings that inhibits the creation of a robust and unified field of research [2]. For example, Chaparro [2] found five broad conceptualizations of pivoting including a type of change, a type of strategic decision, a mechanism related to correction or replacement, a process, or an event and a state or condition.

Additionally, scholars debate what type of change constitutes a “pivot”. Some consider pivots to be any

incremental change in direction [3] while others consider a pivot to be the culmination of many incremental changes [4]. While small, natural business decisions are just part of what all businesses engage in [5, 6] a pivot is a radical change [7]. In order to distinguish a pivot from other types of organizational changes, this study defines a pivot as a strategic decision made after a failure, or the identification of a potential failure, that fundamentally alters a startups business model [2, 5].

Although the term pivot is related to the concept of business model innovation and is often discussed in the context of large established firms, early-stage startups offer a richer context for studying the change in direction because of the number of pivoting decisions these ventures undertake in response to the uncertainty they face. This interest is evidenced by the rapid increase in the number of entrepreneurship publications on pivoting in the last few years [2].

Entrepreneurs managing high degrees of uncertainty are often faced with failure and must make the choice of staying committed to their original business model or pursuing a new direction. Entrepreneurial firms confront this choice with ambiguous data, scarce resources, and limited firm history to learn from [4]. Deciding when and if to pivot is one of the most common and important decisions entrepreneurs will make. It often involves costly, partially irreversible strategic commitments and unknown outcomes. Pivots may also place stakeholder networks at risk and compromise the firm's existence [1, 2, 8, 9].

Despite the potential risk, pivoting is promoted and celebrated in the entrepreneurship literature where it is often characterized with a few well-known anecdotes told of successful pivots. For example, Groupon began as a do-good site called The Point, PayPal started as cryptography libraries for Palm Pilot devices, and YouTube started as a video-dating site [10].

There are many reasons an entrepreneur would decide to pivot. Clearly, staying with a business idea that is not working could have severe consequences, particularly for a start-up which is often focused on a

single project. Project failure in this case can put the entrepreneur out of business. Questioning initial low-potential business models and refining them helps entrepreneurs discover and assess multiple alternatives, gather valuable information, and make better decisions [9, 11]. Failure followed by pivoting is often treated positively as a validated learning process [1, 12]. Research has also found that business model viability is greatly improved by business model experimentation. For example, pivoting is the most frequently occurring commonality among different successful startups [1] and committing too early to a specific business model can have negative effects on long-term survival and performance [7].

However, there is no guarantee of success especially since pivoting can consume resources and move entrepreneurs away from competencies. For example, as entrepreneurs build their businesses they become increasingly knowledgeable in the associated processes, technologies and markets. They may lose that expertise during a pivot resulting in lost time and resources [13]. This risk is amplified the later a pivot occurs.

The importance of pivoting to entrepreneurs deserves research attention and currently there is a gap in our understanding. Prior work tends to be conceptual [14-17], qualitative [4, 7, 18], or quantitative in the context of established firms [19, 20]. Nascent research on startup pivots focus on antecedents, i.e. what triggers a pivot, such as feedback, entrepreneur characteristics, environmental factors, or investment [13, 21, 22]. In general, existing research and knowledge on pivots is limited and there has been a call for better understanding of business model development in new ventures [2, 4, 11, 21].

This study fills the research gap in a number of ways. First, we use the Kauffman Firm Survey longitudinal dataset to empirically investigate startup survival and pivot activity. Second, recent studies of pivot activities [21, 22] noted that often a firm engages in multiple pivots. This being the case, this study investigates the impact of earlier pivots versus later pivots, a relationship that should be empirically examined [6].

Entrepreneurs need to be persistent when facing adversity and skepticism. However when necessary they must also be flexible enough to leave behind some of the ideas in which they invested, and explore different opportunities [13]. But when is the best time to do that? To the best of the authors knowledge, this study is the first of its kind to address the issue of the timing of pivots and startup survival.

2. Framework and Hypotheses

This study defines pivot as a strategic decision made after a failure, or the identification of a potential failure, that fundamentally alters a startups business model. As such, the focus is on pivots that are significant enough to cause a change in the startup's North American Industry Classification System (NAICS) code. For example, Android began as an operating system for cameras and pivoted to the smartphone industry. Flickr was a role playing game that pivoted to a photo sharing service [21].

The Lean Startup literature describes pivots as a way to validate a hypothesis or uncertainty in a business model, and is considered the path entrepreneurs must follow when looking for the correct strategy [1, 23]. Ries [1] cites ten different types of pivots: zoom-in (value proposition focus), zoom out, customer segment, customer need, platform, business architecture, value capture (revenue model), growth engine, channel, and technology.. In addition, Sala [3] found the most frequently pursued pivots are customer oriented.

Pivots are the reaction to a failure of the current business model [2] and can be triggered by either problems or opportunities [4]. An extensive literature review found six factors that trigger a decision to pivot including new information about the environment, customer feedback, emerging new opportunities, failures or unsatisfactory results, resource constraints, or suggestions from third parties (investors, partners, employees, etc.) [2]. For example, pivots triggered by new information reduces uncertainty and helps firms find better business opportunities.

The decision to pivot is critical for several reasons. First, it involves substantial risk and investment, next pivots are linked to the entrepreneur's beliefs and self-perception, and finally the decision can undermine a firm's relationships with its key stakeholders [2].

Furthermore, pivoting often leads to a domino effect where one pivot leads to multiple pivots [3]. For example, MishGuru began as a company that let users design and print their own horseshoes. This idea was not scalable because horse owners were not conducive to rapid growth. They pivoted to a collaborative video making site and finally ended up as a successful content management system for SnapChat. RetentionScience initially provided independent artists a platform where they could promote niche brands and products via social media. This business model proved not to be scalable so it pivoted to providing a social media-based analytics and referral platform for e-commerce businesses. However, because they encountered many well-funded competitors working in the same area, they pivoted again towards a retention automation platform that makes AI accessible to business clients.

Pivoting clearly makes sense when a business idea is not working and staying with it would have severe consequences. Literature shows strategic pivoting can lead to desired results [3] and has been associated with venture success [9, 17]. However, challenges faced by startups pursuing pivots fall into three categories: persuading customers, pursuing stakeholders, partners, or suppliers, and onboarding resources [3]. Each of these can be more difficult the later the pivot occurs therefore pivoting earlier may have some advantages over pivoting later. As examples, tech companies Twitter and Facebook are international firms that pivoted at a very early stage of their development [3].

Pivots can redirect a failing business model but at the same time they consume scarce resources. The later the pivot, the more resources have been consumed following an ill-conceived strategy. In addition, if pivots occur early in the life of a venture, entrepreneurs will learn about new technical and market issues sooner. They will also build expertise on associated processes, technologies, and markets sooner. With later pivots, more expertise that has consumed time and resources to develop will be lost. Furthermore, developing a clear value proposition for stakeholders sooner will allow a firm to better attract strategic partners and valuable employees.

Finally, relational commitments can constrain temporal commitments. For example, investors may expect returns on their investments by certain milestones or resources that have been committed may allow only a certain amount of time for the completion of activities [24]. Therefore, earlier pivots are more likely to be more successful than later pivots because firms are not restricted by resource lock-ins and path dependencies.

Entrepreneurs therefore should be mindful of the tradeoffs that are made in the timing of their pivots. We investigate this issue, and specifically address the following hypothesis:

H1: Delaying the decision to pivot negatively impacts the company's survival.

3. Methods and Data

Because H1 involves the impact of firm strategy over time, testing it requires the use of longitudinal data. In this study, we use the public version of the Kauffman Firm Survey (KFS), a longitudinal survey of 4928 ventures formed in 2004 across eight years to 2011 [25]. As a proxy for a pivot, we use any change in a company's North American Industry Classification System (NAICS) sector code (the most two significant digits of the six-digit NAICS code). Table 1 presents

the number of times KFS respondents indicated an NAICS sector code.

Count	Sector	Title
285	11	Agriculture, Forestry, Fishing and Hunting
33	21	Mining
51	22	Utilities (Power, Gas, Steam, Water, Sewage)
2694	23	Construction
393	31	Manufacturing (Food, Beverage, Textile, Apparel)
993	32	Manufacturing (Lumber, Chemicals, Pharma)
3328	33	Manufacturing (Mechanical, Electrical)
1491	42	Wholesale Trade
1764	44	Retail Trade (Market Specific Retail)
1470	45	Retail Trade (General Merchandise, Non-Store Retail)
652	48	Transportation & Warehousing (not Messenger, Storage)
51	49	Transportation & Warehousing (Messenger, Storage)
1025	51	Information
1107	52	Finance and Insurance
1209	53	Real Estate Rental and Leasing
8143	54	Professional, Scientific, and Technical Services
52	55	Management of Companies and Enterprises
2380	56	Admin, Support, Waste Mgmt & Remediation Services
202	61	Educational Services
827	62	Health Care and Social Assistance
690	71	Arts, Entertainment, and Recreation
555	72	Accommodation and Food Services
2814	81	Other Services (except Public Administration)

Table 1. NAICS Sector Codes

The NAICS code represents the type of company and the target market; thus, this proxy would detect a pivot that impacts these aspects of the business model, and overlook minor changes to the business. In those eight years, companies pivoted between zero and five times, and each year several hundred additional companies ceased to operate (Table 2).

Year	Total Number of Pivots Per Company						Total	
	Missing	0	1	2	3	4		5
2004		4928					4928	
2005		4144	784				4928	
2006	407	3671	299	551			4928	
2007	635	3287	460	522	24		4928	
2008	1063	2920	365	533	28	19	4928	
2009	1417	2619	348	487	36	18	3	4928
2010	1714	2380	327	434	49	18	6	4928
2011	1962	2185	306	397	51	18	9	4928

Table 2. Survival and pivoting activity per year

Previous research showed that pivoting activity has a non-linear effect on venture performance [26, 27]. Some pivoting improves the business model, but too much pivoting is indicative of a lack of strategy. Consistent with the previous research, we model the effect on venture survival as a quadratic of the number of pivots. To address the research question, we introduce time (year) as a mediating variable to pivoting activity in a logistic regression on the binary dependent variable "venture survival." The odds ratio of a firm j surviving in year t is thus modeled as

$$OR_{j,t} = e^{\text{logit}} = \exp(\beta_0 + \beta_1 p_{j,t} + \beta_2 p_{j,t}^2 + \beta_3 t_{j,t} + \beta_4 t p_{j,t} + \beta_5 t p_{j,t}^2)$$

where β_i is the i 'th order coefficient of the logit, and $p_{j,t}$ is the number of pivots the firm has reported since its inception up to year t .

4. Results

The results of the logistic regression are presented in Table 3 and illustrated in Figure 1. All coefficients were

statistically significant to the model. The negative coefficient of the independent variable Year is indicative of the persistent failure rate of ventures. The vertical displacement of profiles in the sliced view of the regression model (Figure 2) indicates that pivoting activity made sooner has a more positive effect on survival than pivoting activity made later. The u-shape confirms that there is an optimal

Number of obs = 39,424	LR chi2(5) = 6126.10					
Log likelihood = -15674.464	Prob > chi2 = 0.0000					
	Pseudo R2 = 0.1635					

VentureSurvival	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]	

Pivots	-1.147306	.2415886	-4.75	0.000	-1.620811	-.6738014
Pivots^2	.7154762	.1352279	5.29	0.000	.4504343	.980518
Year	-.5189568	.0083592	-62.08	0.000	-.5353405	-.5025731
Pivots * Year	.1211241	.0428338	2.83	0.005	.0371713	.2050768
Pivots^2 * Year	-.0648024	.0232457	-2.79	0.005	-.1103631	-.0192417
constant	3.679011	.0437201	84.15	0.000	3.593321	3.7647

Table 3. Logistic regression model

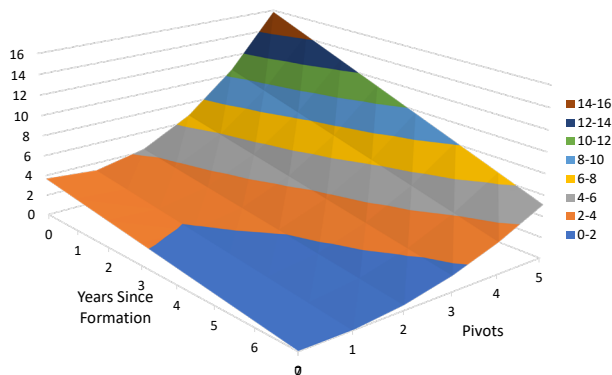


Figure 1. Logit of Venture Survival

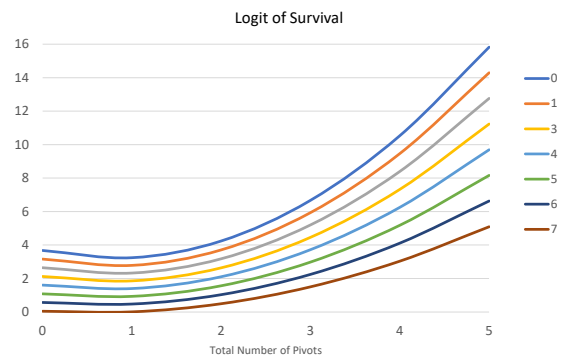


Figure 2. Sliced view of logit of venture survival.

5. Discussion, Limitations, and Future Research

Entrepreneurs who subscribe to the lean startup methodology acknowledge that they will likely need to pivot, possibly multiple times, in order to reduce business model uncertainty. Unfortunately, neither this methodology nor the extant literature provides the entrepreneur with much guidance as to *when* to execute

a pivot. The lean startup methodology in effect transforms business model uncertainty into pivoting uncertainty, and this study addresses the latter.

This study empirically confirms that delaying the decision to pivot negatively impacts a company's survival and entrepreneurs need to be aware of the tradeoffs that are made in the timing of their pivots. Because startups attain legitimacy and resources based on their original vision, engaging in a radical pivot particularly late in the game represents a challenge.

If a pivot must be made when the firm is more mature, even when the pivot is the appropriate response to changing circumstances, there is an elevated need to effectively communicate their changes to a diverse set of relevant stakeholders. Entrepreneurs that engage in anticipating, justifying, and staging a pivot were more likely to retain the support than those who did not leverage these practices [28].

There are several limitations to this study. The first is that the KFS does not reveal multiple pivots or incremental changes that may have occurred between annual follow-ups, but only if at least one occurred. A second limitation is the proxy used for radical pivot: a change in the self-reported six-digit NAICS code. One could argue that a firm could undergo a critical pivot without incurring a change to its NAICS, although an NAICS change would remain being a strong indicator of radical pivot.

This exploratory research can be continued along several directions. The model can be expanded to investigate factors that may contribute to the impact of pivot timing such as industry characteristics. For example, although high-tech companies were found to

be more sensitive to pivot severity than low-tech companies [26] other industry characteristics could be critical. Relational commitments can constrain temporal commitments therefore opportunities that do not necessitate a large strategic commitment of resources may tolerate later pivots better. For example, software versus hardware firms, or service providers versus manufactures. Also, a firm's reliance on investors could impact the effect of pivot timing with those startups not as reliant on investors also tolerating later pivots better than those that are.

Finally, very radical pivots (e.g., a sector change involving the two most significant digits of the NAICS code) can be distinguished from less radical pivots. It is possible that different types of pivots occur with different outcomes at different stages. Blank [23] calls these stages the concept, development, working prototype, and mature product stages. Unlike the public version of the KFS which provides only the leftmost two digits of each firm's NAICS code, the confidential version of the KFS dataset will provide all six digits, enabling this study to detect more subtle pivots that impact only the four less significant digits.

6. References

- Ries, E., *The lean startup: How today's entrepreneurs use continuous innovation to create radically successful businesses*. 2011: Crown Books.
- Chaparro, X.A.F., de Vasconcelos Gomes, L. A. , *Pivot decisions in startups: a systematic literature review*. International Journal of Entrepreneurial Behavior & Research, 2021. February
- Sala, P.K., Philbin, S. P., Barikzai, S. . *Exploring entrepreneurial pivoting and the factors that trigger pivots by tech startups*. in *IEEE Technology & Engineering Management Conference*. 2021. Europe
- Jacqueline Kirtley, S.O.M., *What is a pivot? Explaining when and how entrepreneurial firms decide to make strategic change and pivot*. Strategic Management Journal, 2020: p. 1-34.
- Lamm, B., *Can We Stop Pivoting Already? Odds are if you need to 'pivot,' either you made a major miscalculation or you're just growing and adapting, not pivoting*, in *Entrepreneur* 2018.
- Morgan, T., Anokhin, S., Ofstein, L., Friske, W. , *SME response to major exogenous shocks: The bright and dark sides of business model pivoting*. International Small Business Journal, 2020. **38**(5): p. 369-379.
- Andries, P., K. Debackere, and B. Looy, *Simultaneous experimentation as a learning strategy: Business model development under uncertainty*. Strategic Entrepreneurship Journal, 2013. **7**(4): p. 288-310.
- Christian Hampel, P.T., Klaus Weber, *The art of the pivot: How new ventures manage identification relationships with stakeholders as they change direction*. Academy of Management Journal, 2020. **63**(2): p. 440-471.
- Pillai, S.D., Goldfarb, B., Kirsch, D. A., *The origins of firm strategy: Learning by economic experimentation and strategic pivots in the early automobile industry*. Strategic Management Journal, 2020. **41**(3): p. 369-399.
- Arteaga, R., & Hyland, J. , *Pivot: How top entrepreneurs adapt and change course to find ultimate success*. 2013: John Wiley & Sons.
- Leatherbee, M. and R. Katila. *Stay the Course or Pivot? Antecedents of Cognitive Refinements of Business Models in Young Firms*. in *Academy of Management Proceedings*. 2017. Academy of Management Briarcliff Manor, NY 10510.
- Ries, E., *Lessons learned: Pivot, don't jump to a new vision*. 2009.
- Crilly, N., *'Fixation'and 'the pivot': balancing persistence with flexibility in design and entrepreneurship*. International Journal of Design Creativity and Innovation, 2018. **6**(1-2): p. 52-65.
- McGrath, R.G., *Business models: A discovery driven approach*. Long range planning, 2010. **43**(2-3): p. 247-261.
- Snihur, Y., B.S. Reiche, and E. Quintane, *Sustaining Actor Engagement During the Opportunity Development Process*. Strategic Entrepreneurship Journal, 2017. **11**(1): p. 1-17.
- Chesbrough, H., *Business model innovation: opportunities and barriers*. Long range planning, 2010. **43**(2-3): p. 354-363.
- Boddington, M.K., Stylianos, *How to Pivot or Persevere? Unpacking the Role of Reasoning Models in Entrepreneurial Strategy Formation* 2022.

18. Amit, R. and C. Zott, *Value creation in e-business*. Strategic management journal, 2001. **22**(6-7): p. 493-520.
19. Kim, S.K. and S. Min, *Business model innovation performance: When does adding a new business model benefit an incumbent?* Strategic Entrepreneurship Journal, 2015. **9**(1): p. 34-57.
20. Osiyevskyy, O. and J. Dewald, *Explorative versus exploitative business model change: the cognitive antecedents of firm-level responses to disruptive innovation*. Strategic Entrepreneurship Journal, 2015. **9**(1): p. 58-78.
21. Bajwa, S.S., et al., *"Failures" to be celebrated: an analysis of major pivots of software startups*. Empirical Software Engineering, 2017. **22**(5): p. 2373-2408.
22. Brush, C.G.E., Linda F.; and Manolova, Tatiana S. , *To Pivot or Not To Pivot: Why Do Nascent Ventures Change Their Business Models?* Frontiers of Entrepreneurship Research, 2015. **35**(1).
23. Blank, S., *Why the lean start-up changes everything*. Harvard business review, 2013. **91**(5): p. 63-72.
24. Hans Berends, E.v.B., Raghu Garud, *Pivoting or persevering with venture ideas: Recalibrating temporal commitments*. Journal of Business Venturing 2021. **36**(4): p. 106-126.
25. Robb, A. and J. Farhat, *An Overview of the Kauffman Firm Survey: Results from 2011 Business Activities*. 2013, Ewing Marion Kauffman Foundation.
26. Bandera, C. and E. Thomas. *Pivoting Strategies: A Study of Pivot Severity, Investor Reliance, and Revenue among Startups*. in *Proceedings of the 55th Hawaii International Conference on System Sciences*. 2022.
27. Bandera, C. and E. Thomas. *To pivot or not to pivot: On the relationship between pivots and revenue among startups*. in *Proceedings of the 52nd Hawaii International Conference on System Sciences*. 2019.
28. McDonald, R.G., C., *Pivoting isn't enough? Managing strategic reorientation in new ventures*. Organization Science, 2019. **30**(6): p. 1289-1318.