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Abstract

Purpose – Business accelerators facilitate new venture creation, and most research on the subject focuses on the performance of accelerated ventures. This paper aims to understand what entrepreneurs value in business accelerators and how this differs for women- and men-led ventures. We suggest that venture growth stage may play a mediating role in these relationships.

Design/methodology/approach – We use the resource-based view perspective to develop models of women- and men-led ventures' valuation for business accelerator services. We draw upon a database of 2,000 U.S. entrepreneurs.

Findings – We found that, compared to men, women entrepreneurs place greater value on knowledge transfer benefits (i.e., business skills education) but lower value on networking benefits offered by accelerators. However, there are no significant differences in the valuations for these services between genders for high-growth ventures. Additionally, compared to men, women leading high-growth ventures place greater value on access to potential investors or funders.

Practical implications – This research serves as a practical guide for accelerator administrators and marketers who seek to adjust their business support offerings based on the value placed for the services by different populations of entrepreneurs.

Originality – We provide a business accelerator user's perspective and highlight differences in valuation of accelerator services by women- and men-led ventures at different stages of venture growth.

Keywords Accelerator, Business support, Entrepreneur, Women-led ventures, High-growth ventures, Resource-based theory

Paper type Research paper

1. Introduction

"The world and its high-growth companies don't need another one-size-fits-all accelerator" concluded Mike Preuss from the survey of investors and attendees of the StartupFest conference that draws in top entrepreneurs and investors from across the globe. Despite a recent rapid growth in business accelerators, scholars have accumulated little insight into the demand side for accelerators. Existing research tends to focus on how well accelerators can help entrepreneurs. A notable exception is a recent paper by Lange and Johnston (2020) who ask to what extent entrepreneurs value business accelerators and what contributes to this value. The role of customers has been emphasized in both the marketing and innovation literature (La Rocca et al., 2016; Zhang and Xiao, 2020) and is becoming one of the main priorities for marketers in business-to-business (B2B) settings (Berenguer-Contrí et al., 2020; Massi et al., 2020; Grafmüller, 2020; Lambert and Enz, 2012). The role of co-creation in the business accelerators market is also starting to be emphasized by practitioners. Citing results from the survey of investors and top entrepreneurs interested in accelerator services, VisibleVC company listed alignment among stakeholders and understanding the value accelerators add to the companies instead of *one-size-fits-all accelerator* as top priorities for business accelerators (Preuss, 2020). We extend this line of research, that gives "a voice to the users" (Lange and Johnston, 2020, p. 1564), to show that the value placed on accelerator services differs for women- and men-led ventures and also depends on venture growth stage.

While in theory entrepreneurship is open to anyone, rates of women entrepreneurship have historically lagged those of men in most of countries (Lopez-Nicolas et al., 2020; GEM, 2017; Jennings and Brush, 2013). In fact, in the USA, women are still half as likely as men to start a business. However, the number of women who own businesses has been increasing in the

USA and internationally, and women entrepreneurship was identified by the World Economic Forum (2012) as the "way forward" (Yousafzai et al., 2015, p. 587). Despite the significant growth of female venturing in recent years and its relevance to the economy, a large number of studies claim that women still face greater barriers to start and grow their businesses. For example, women were shown to start their ventures with less money, to face significant barriers in obtaining the financing, to be less likely to hire employees, to start their ventures in less profitable industries, and to have lower financial knowledge and industry experience (Malmström et al., 2017, 2020; Orser et al., 2020; Coleman and Robb, 2009; Mijid, 2015; Wu and Chua, 2012). We expect these gender differences in entrepreneurial experiences to influence values placed on various business accelerators' services by women-led ventures, the topic addressed in this paper.

Ventures that grow and hire employees are usually more mature and are able to survive the initial resource strained periods. These ventures, that have realized a substantial increase in firm's size (Terjesen et al., 2016), are particularly critical to economic growth given their capacity to create new jobs (Henrekson and Johansson, 2010), stimulate innovation (Terjesen et al., 2016), achieve long-term survival (Headd, 2003), and mitigate recessionary pressures (Bamiatzi and Kirchmaier, 2014). We expect that the value placed on various accelerator services may be moderated by the venture growth stage for women- and men-led ventures. In this paper, we follow the definition from Terjesen et al. (2016) of a high-growth venture as a firm that has realized "a substantial increase in firm size (employees) or output (sales) over a number of years" (Terjesen et al., 2016, p. 232).

From the resource-based perspective (RBV) of the firm, a challenge to entrepreneurial firms is to create or pick the most valuable resources (Barney, 1991; Penrose, 1959, 1995;

Wernerfelt, 1984). However, the availability of these resources may not be the same for all genders. Consequently, scholars, policymakers, and practitioners increasingly recognize the importance of seeding and accelerating entrepreneurship through acceleration mechanisms (Lange and Johnston, 2020; Öberg et al., 2020; Del Sarto et al., 2020; Uhm et al., 2018; Hochberg, 2016; Mansoori et al., 2019). Business accelerators can be viewed as *brokering spaces* where these resource gaps and market discriminations and imperfections can be mitigated. In terms of social network theory, brokers facilitate links between persons who are not directly connected (Öberg et al., 2020), and Peters et al. (2004) proposed that accelerators can be viewed as intermediaries to a much larger set of networks. In addition to this so-called bridging benefit, accelerators provide buffering resources that protect new organizations from the external environment in order to engage in formational and developmental activities (Amezcua et al., 2013; Lukeš et al., 2019). Although there is significant literature on how accelerators can best help entrepreneurs, there is a paucity of studies exploring how gender differences influence the value placed for specific accelerator resources.

To expand the women entrepreneurship and business acceleration literature, we use the RBV perspective to explain what services women entrepreneurs value in accelerators. Thus, our central research question is this: "What do entrepreneurs value in business accelerators and how this differs for women- and men-led ventures?" Additionally, we explore the mediating role of venture growth stage. We make the following contributions to knowledge and practice. First, we give a voice to the user in the B2B setting: We show business accelerators what ventures value the most in their offerings. Second, we incorporate gender, venture growth stage, and valuation of accelerator services into incubation theories. Third, we provide stakeholders involved in

accelerators with a clearer understanding of how to ensure that appropriate support and resources are available for specific client types and how to market their specific programs.

We empirically test our models by drawing upon a large and unique database of more than 8,000 early-stage entrepreneurs who applied to a self-selected group of more than 80 accelerator programs in years 2013 to 2016. The database ranged worldwide, but we limited the analysis to U.S. startups only, which gave us a sample of more than 2,000 firms. The data set was courtesy of the Entrepreneurship Database Program at Emory University, supported by the Global Accelerator Learning Initiative.

2. Theoretical background

We use the resource-based view (RBV) of a firm to delineate the value proposition of accelerators. Then, we link founders' gender to this value proposition. We argue that female entrepreneurs value a different set of accelerator benefits, as compared to male entrepreneurs. We explore venture growth stage as a potential moderator of this relationship.

2.1. The resource-based view theory

The resource-based view theory (Barney, 1991; Penrose, 1959, 1995; Wernerfelt, 1984) has been widely used in marketing and strategic management to analyze firm level attributes that are crucial to firm performance, such as resources, capabilities, competitive advantages, routines, competencies, skills, and knowledge (Kozlenkova et al., 2014; Somsuk et al., 2012). The main premise of RBV is that a firm is a collection of unique resources and capabilities and its performance is determined by the resources it owns. These resources include financial, physical, human, commercial, technological, and organizational capital (Barney, 1991), as well as invisible assets such as marketing and management skills and experience, distribution control, corporate culture, consumer trust, or brand image (Itami and Roehl, 1987). The more valuable

and scarce resources a firm owns, the more likely it is to generate sustainable competitive advantages. From the RBV perspective, accelerators provide a resource base necessary for supporting startups. Thus, accelerators add to the stock of resources available to the new venture (Lange and Johnston, 2020; Uhm et al., 2018; Mian et al., 2016; Rothaermel and Thursby, 2005). These resources include building brands, relationships, knowledge, as well as providing access to funding. Accelerators are seen as mechanisms that can transfer tangible and intangible resources and create supportive and entrepreneurial environments for startups helping, them to increase their survival rates and performance.

2.2. The value proposition of accelerators

Business and technology incubators became popular in the U.S. in the 1980s and since then spread throughout the world in large numbers. The idea is to take on ventures in early phases and develop them into viable companies. Startups usually stay in these programs from a few months to three years and are offered services that frequently include shared office space, access to networks, investors, mentoring, business education, and even direct funding (Lange and Johnston, 2020; Bruneel et al., 2012; Del Sarto et al., 2020; Mansoori et al., 2019; Theodorakopoulos et al., 2014). In 2005, a new form of the technology business incubator was formed: the accelerator (Mian et al., 2016). The first accelerator was a very successful Y Combinator started in Cambridge, Massachusetts. Accelerators have distinctive characteristics that differentiate them from previous generations of incubators. They differ from incubators by usually not focusing primarily on providing physical resources or office support (Lange and Johnston, 2020). They are designed to offer investment (usually in exchange for equity) from business angels and small-scale individual investors and place emphasis on extensive business development by providing mentoring sessions and networking opportunities. Also, startups

usually stay in accelerators for a shorter time, averaging 3-6 months (Lange and Johnston, 2020; Del Sarto et al., 2020; Mansoori et al., 2019; Uhm et al., 2018; Pauwels et al., 2016) as compared to up to three years in incubators.

Drawing on the RBV theory, two different mechanisms, buffering and bridging, explain how accelerators support startups (Lange and Johnston, 2020; Amezcua et al., 2013; Lukeš et al., 2019). Buffering interventions protect new organizations and lessen dependence on the external environment for resources (Hall, 1982) and may include tax shelters, subsidized product development, consulting services, small business loans, or labor force training (Amezcua et al., 2013; Lukeš et al., 2019). Bridging interventions effectively link organizations to their environment, providing networking, legitimacy, social capital, structural incentives and programs encouraging early-stage investments, memberships and associations. Thus, accelerators act as *brokering spaces*, linking persons who are not hitherto connected (Amezcua et al., 2013; Lukeš et al., 2019; Öberg et al., 2020; Peters et al., 2004). Accelerator programs provide services and functions that are difficult and costly for an entrepreneur to obtain (Mian et al., 2016).

A direct-effect model of the RBV investigates the link between resources and firm's performance (Kozlenkova et al., 2014; Liang et al., 2010). However, evidence is mixed about the impact of incubators and accelerators on start-up performance (Bruneel et al., 2012; Del Sarto et al., 2020; Lukeš et al., 2019; Mansoori et al., 2019; Mas-Verdú et al., 2015; Storey, 2000; Yang et al., 2018). Recently, Klofsten et al. (2020) provided a list of recent literature on incubators. The literature on the effects of accelerators is especially limited since they are a new form of incubation (Lange and Johnston, 2020; Del Sarto et al., 2020; Pauwels et al., 2016). Moreover, there appears to be lack of research investigating the impact of such resources for different client

types (Aaboen, 2009). Given these inconsistent results, it is unclear whether direct effect exists between accelerators' resources and startups' financial or operational performance for all populations. As Pauwels et al. (2016) indicated, the real challenge is to understand the distinctive characteristics and profiles of clients and other stakeholders and how accelerators adopt different ways of structuring and running their programs in response to objectives of these key stakeholders. We propose that different populations of startups place distinctive values on accelerator benefits. Developing a strong understanding of the specific demands of particular ventures will help accelerators to better tailor and market their offerings toward these client groups.

2.3. What do women entrepreneurs value in accelerator services?

Using the RBV perspective as a theoretical framework, we explore how women- and men-led ventures differ in their valuation of accelerator services. Even though the literature about business support programs has grown substantially in recent years, especially for business incubators (Diez-Vial and Montoro-Sanchez, 2017), there is a paucity of studies analyzing the demand side for accelerator services (Lange and Johnston, 2020; Chen et al., 2018). Previous research suggests that entrepreneurs value the most access to tangible resources (i.e., physical and financial capital) offered by accelerators (Soetanto and Jack, 2013; van Weele et al., 2017). But Lange and Johnston (2020) found that knowledge and culture resources had the largest predictive impact on a program's value. They found that the users' top three most cited valuable accelerator benefits were (in order): (1) network/connections; (2) mentorship/advice; and (3) funding/capital. Those discrepancies may come from different type of business accelerator users. Given the differences documented in literature between women- and men-led ventures in structure and access to resources (Lopez-Nicolas et al., 2020; Marlow and McAdam, 2013; Robb

and Watson, 2012), it is reasonable to expect that gender influences the value entrepreneurs place on potential accelerator benefits.

2.3.1. Funding benefit

According to the RBV theory, growth of a small firm depends on the type and amount of resources controlled by or made available to it. Extensive empirical evidence suggests that securing funding may be particularly important in achieving the growth objectives of the firm because high levels of financial resources are needed for rapid firm growth (Sexton and Bowman-Upton, 1991; Storey, 1994; Wiklund and Shepherd, 2003). As noted by Wiklund and Shepherd (2003), financial capital can relatively easily be converted into other types of resources. Extensive previous literature suggests that ventures that receive external capital achieve significantly higher sales and employment growth (Bertoni et al., 2011; Gartner et al., 2009; Kwapisz and Hechavarría, 2017).

However, substantial literature suggests that women have impeded access to early-stage financing, and access to finance is cited as one of the main barriers in women entrepreneurship (Aldrich, 1989; Brush, 1992; Brush et al., 2006; Dean et al., 2017; Mijid, 2015; Treichel and Scott, 2006; Wu and Chua, 2012; Lopez-Nicolas et al., 2020). Financial market discrimination constrains the resources available for growth for female-led ventures. Even though gender differences in obtaining financial capital are diminishing (Orser et al., 2006), many recent studies show that women entrepreneurs still receive a lower amount of financing and/or are otherwise discriminated against in obtaining financing. For example, bank loan officers employed different evaluation criteria for women entrepreneurs (evaluating a person more than a venture), request greater information, question their commitment, or charge them higher interest rates (Johansson et al., 2021; Eddleston et al., 2016). On the demand side, due to fear of denial, women were

found reluctant to ask for financing and more likely to use credit cards and family support to finance their ventures (Kwapisz and Hechavarría, 2017; Orser et al., 2006). Research by Amanatullah and Morris (2010) suggests that, in self-advocacy context, women chose not to take the risk and ask for financing because they anticipate backlash in the form of negative evaluations or negative treatment. However, women asked for just as much money as men when they negotiated on behalf of a friend. Thus, women are more confident asking for financing indirectly or with the help of others. Based on these considerations, accelerator support in obtaining finances may be particularly valuable to women entrepreneurs.

Accelerator programs offer two types of funding: direct and indirect. Direct works through seed funding (buffering benefit). Indirect facilitates access to investors (bridging benefit). In the presence of a preference for indirect *asking for financing*, women-led ventures are expected to have high desire to utilize accelerators to access potential investors and funders.

H1. *On average, compared to males, female entrepreneurs place higher value on accelerators' funding benefits.*

2.3.2. Transfer of knowledge benefit

Accelerators frequently offer business skills training and mentorship as a way to transfer knowledge to ventures. Startups require a variety of skills to compete effectively in today's fast-changing and more open markets. Prominent among these are marketing and managerial skills that include the ability to build a brand and marketing strategy, to identify feasible projects and access information, to prepare fundable business plans, and to acquire the appropriate technologies. Other skills include business planning, accounting, financing, and production (Lalkaka, 2006). Transfer of more tacit knowledge is done by mentoring. A business mentor offers knowledge, wisdom, and advice to new startups. The benefits of mentoring are

widespread, from offering professional development to improving communication and developing professional relationships. A low level of professional, technical, or business skills could prevent an entrepreneur from growing or establishing a new venture (Davidsson, 1991; Gnyawali and Fogel, 1994). Many startups fail because of poor planning or inadequate marketing and management skills, and knowledge of the small business manager was found to be a factor affecting venture growth outcomes (O'Dwyer et al., 2009; Harrigan et al., 2011; Naidoo, 2010; Sexton and Bowman-Upton, 1991; Wiklund and Shepherd, 2003).

Despite the importance of business knowledge skills, women entrepreneurs frequently lack them (Lopez-Nicolas et al., 2020; Wu and Zhang, 2019; Anna et al., 2000). Managing the cash flow and efficiency of operations involves economic management competencies, and women may often lack such financial skills due to educational background (Lusardi and Mitchell, 2011; Anna et al., 2000; Collerette and Aubry, 1990). Similarly, putting together a business plan to obtain financing is a troublesome step for some women entrepreneurs (Anna et al., 2000). Also, females frequently rate themselves as less competent in financial skills than do males (Brush, 1992) and have lower levels of confidence in their abilities (Chen et al., 2018). They have lower chances to obtain such expertise in their previous work, as fewer of them are promoted to senior managerial positions (Lopez-Nicolas et al., 2020; Anna et al., 2000). Thus, based on the RBV theory, business skill training and mentorship offered by accelerators should be especially attractive to women-led ventures. Women entrepreneurs are more likely to need assistance in obtaining such resources for their startups and are more likely to be receptive to such assistance from accelerators.

H2. *On average, compared to males, female entrepreneurs place higher value on accelerators' transfer of knowledge benefits.*

2.3.3. Networking benefits

Extensive research examined the association between the owner-manager's social networks and rates of business formation, survival, and growth (Aldrich, 1989; De Clercq and Voronov, 2009; Redondo and Camarero, 2017). However, the conclusions from this research are not uniform. Watson (2012) concluded that external accountants are the only formal network resource significantly related to firm survival and growth.

Ibarra (1992) classified networks as either formal, which include accountants, banks, lawyers and trade associations, or informal, which include business contacts, family and personal relationships (Littunen, 2000). Accelerator programs offer both formal and informal networking opportunities for new ventures by facilitating meetings with customers and partners and other like-minded entrepreneurs (Bøllingtoft, 2012). Both the RBV and social capital theories suggest that ventures whose owners gain access to resources through networking would outperform ventures whose owners make limited (or no) use of networks (Havnes and Senneseth, 2001). Additionally, formal networks are likely to have a greater impact than informal networks.

Turning to the possible gender differences between the networks, previous literature suggests that males and females are likely to be embedded in different types of networks (Aldrich, 1989). Women entrepreneurs were found to have smaller and informal networks, comprising family and friends. These networks are also mostly all-female (Aldrich, 1989; Diaz and Carter, 2009; Hampton et al., 2009; Klyver and Terjesen, 2007). However, according to Watson (2012), these differences do not appear to negatively impact the performance of female-led ventures. For women-led ventures, networks of family and friends were significantly correlated with firm performance after controlling for education, experience, industry, age, and size. In contrast, for men, industry-based networks were significant. Thus, since women prefer to

access their networks by personal contacts with family and friends, there is a reason to expect that women entrepreneurs would rank accelerator networking benefits lower.

H3. *On average, compared to males, female entrepreneurs place lower value on accelerators' network benefits.*

2.4. Moderating effect of venture growth stage

Ventures that achieved significant growth in employment over the years are considered high-growth (Terjesen et al., 2016). From the RBV perspective, these ventures were able to overcome the initial resource-strained period and are more likely to grow and survive. Despite the growing interest and importance of studying these ventures, there is a relative paucity of research on women leading high-growth ventures (Lopez-Nicolas et al., 2020; Lukeš et al., 2019; Gundry and Welsch, 2001). We expect that the value placed on various accelerator services by women entrepreneurs will be affected by the venture growth stage.

2.4.1. Funding benefit

Women leading high-growth ventures are expected to have greater experience and awareness of difficulties of obtaining external financing (Sirmon and Hitt, 2003). In fact, they were shown to be significantly more likely to search for outside financing (Gundry and Welsch, 2001). Eddleston et al. (2016) reported that, compared to men, women entrepreneurs received less bank financing on the basis of having a high number of employees, suggesting that high-growth ventures were a positive signal of viability for men but less so for women. Thus, any opportunity to secure additional funds for their ventures should be an attractive benefit for female entrepreneurs leading high-growth ventures.

H4. *On average, compared to their male counterparts, female entrepreneurs leading high-growth ventures place higher value on accelerators' funding benefits.*

2.4.2. Transfer of knowledge benefit

Previous literature pointed to women entrepreneurs' disadvantage in starting their ventures as they often have lower business knowledge skills due to educational background and experience (Lopez-Nicolas et al., 2020; Lusardi and Mitchell, 2011). However, at the higher growth stage, we expect these differences to disappear as entrepreneurship is a practical skill with a steep learning curve where much of an entrepreneur's learning-by-doing takes place in the early stages (Cope and Watts, 2000). Additionally, learning from experiences was found to be moderated by emotional regulation for entrepreneurs: Those with higher emotion regulation were able to learn more from their experiences (Fang He et al., 2018). Since, in general, women were found to have higher emotion regulation (Garnefski et al., 2004), we expect the initial business knowledge disadvantage to disappear at a faster pace. Therefore, we expect that women leading high-growth ventures will not differ from men in their valuation of accelerators' transfer of knowledge benefits.

H5. *On average, compared to their male counterparts, female entrepreneurs leading high-growth ventures place similar value on accelerators' transfer of knowledge benefits.*

2.4.3. Networking benefits

Female entrepreneurs leading high growth ventures were found to have more diverse and mixed gender networks, including contacts to clients, suppliers, distributors, potential employees, partners, technical resources, freelance workers, service providers, training, professional and business advisers (Roomi, 2009). Thus, female entrepreneurs who were able to persist in the new venture process develop networks similar to their male counterparts (Klyver and Terjesen, 2007). Therefore, we expect female entrepreneurs leading high-growth ventures to place similar value on accelerators' networking benefits as male entrepreneurs.

H6. *On average, compared to their male counterparts, female entrepreneurs leading high-growth ventures place similar value on accelerators' network benefits.*

3. Data and methods

Data for this research were provided by the Entrepreneurship Database Program at Emory University supported by the Global Accelerator Learning Initiative (GALI). GALI was created and founded by the U.S. Global Development Lab at the U.S. Agency for International Development, Omidyar Network, the Lemelson and the Argidius Foundation, the Kauffman Foundation, Stichting DOEN, and Citibanamex. They collected data from entrepreneurs who applied to a self-selected group of social accelerator programs from 2013 to 2016[1]. The sample of 8,655 early-stage ventures from roughly 100 different programs across the world was available. The data set includes all ventures that applied to participating accelerator programs and not only the ones that were accepted. We limited our sample to ventures that listed USA as both the country of operations and the country of headquarters. This choice was made because women's experience in entrepreneurship and accelerator programs and management may be hard to compare across different countries. Additionally, ventures that were more than 10 years old were excluded to avoid inclusion of startups that are no longer active. Ultimately, our sample contained 2,009 U.S. early-stage ventures (however, some variables have missing observations). Following Terjesen et al. (2016) and others, we define high-growth ventures as the subset of entrepreneurs that have realized a substantial increase in firm's size, measured as the number of employees over the years. Specifically, we coded as high-growth ventures those that employed, on average, more than one employee per year (i.e., the total number of employees divided by the

[1] Per personal communication with GALI, ventures included in the sample have a wide range of impact aspirations (and do not include only social ventures).

venture age > 1; an average for all ventures was 0.85 employee/year and an average age of the startup was 1.76 years.) Applicants were also asked to rank pre-defined benefits offered by accelerators on the Likert scale from one to seven (with one being the most important and seven being the least important, but we reversed this scale for easier interpretation of the results). The following benefits were ranked: networking development (e.g., contacts with potential partners and customers), business skills development (e.g., finance and marketing skills), mentorship from business experts, access and connections to potential investors / funders, securing direct venture funding (e.g., grants or investments), and gaining access to a group of like-minded entrepreneurs. An applicant survey was conducted before the admission decision. In order to test our hypotheses, we used a series of variables describing the entrepreneur and the venture and control variables. Our data set provides information on the leading entrepreneur's age, sex, team size, formal education level, previous start-up and work experience, previous accelerator experience, time in the start-up process, intellectual property owned, and whether their own money was invested in the start-up. We also know if the venture was for profit and if it had any social motives. The industrial sector is recorded as well since previous literature suggests that women tend to start their ventures in the retail and personal service sectors (Anna et al., 2000; Orser et al., 2006) while men start in manufacturing, extraction, and business services (Terjesen et al., 2016).

Our dependent variables are the Likert scale ratings of various accelerator benefits (*Y=Benefit Rating*). In regressions, we include interaction effects between two dummy coded categorical predictor variables: *Female* and *High-growth*. Thus, the following models are estimated:

$$Y = \beta_0 + \beta_1 \, Female + \beta_2 \, High\text{-}growth + \beta_3 \, Female*High\text{-}growth + Controls*\Phi + \varepsilon$$

The benefits rating equations were estimated by ordered logit models because dependent variables were measured on the Likert scale. The "R" software was used to perform the analysis.

4. Results

4.1. Descriptive Statistics

The descriptive statistics are provided in Table I and Table II. There are no big correlations between our dependent variables, so multicollinearity is not a problem in our analyses (correlations table available upon request). About a third of surveyed startups were led by women and 24 percent were classified as high-growth ventures (Table II). Additionally, Table I indicates the relatively high priority that sampled entrepreneurs placed on connections to funders, network development, and mentorship benefits. On the other hand, gaining access to like-minded entrepreneurs ranked the lowest among the six benefits. Compared to their male counterparts, female entrepreneurs ranked transfer of knowledge benefits (business skills development and mentoring) significantly higher and networking (formal and informal) significantly lower.

Insert Table I about here

Insert Table II about here

4.2. Accelerator Benefits

The model and the results of hypothesis testing are illustrated in Figure 1 and summarized in Table III. We present the regression analyses of preferences for accelerator programs in Table IV. For clarity, only results relevant to testing our hypotheses are presented (full results are available per request). In all regressions, we control for the following: education, age, start-up

experience, prior acceleration, for profit and social motives, intellectual property (e.g., patents), own investment in the venture, team size, venture age, and industry controls.

Insert Figure I about here

Insert Table III about here

Insert Table IV about here

Our results from the basic ordered logit regressions (without interaction terms) suggest that hypothesis H1 was not supported, H2 was partially supported, and H3 was fully supported (Table IV). Contrary to what was expected (H1), male and female entrepreneurs placed similar value on accelerators' funding benefits: access and connections to potential investors / funders and securing direct venture funding (Table IV; Investors OR=0.91 $p>0.10$ and Funding OR=1.07, $p>0.10$). In terms of transfer of knowledge benefits, compared to males, female entrepreneurs placed higher value on business skills development (Table IV; Business Skills OR=1.42, $p<0.01$) but similar value on mentoring from business experts (Table IV; Mentoring OR=1.13, $p>0.10$), partially supporting our H2 hypothesis. Finally, women placed less value on formal (Table IV; Networking OR=0.82, $p<0.10$) and informal (Table IV; Meet Others OR=0.77, $p<0.05$) accelerators' networking benefits validating our H3 hypothesis (however, the result for formal networking was only significant at 10% level).

Next, including interaction effects in Table IV allowed us to test hypotheses H4-H6 that examined previous relationships for high-growth female-led ventures. The study findings support hypotheses H5-H6, and partially H4. The results for H4 are particularly interesting. As described

above, our hypothesis H1 predicting that female entrepreneurs place greater value on accelerators' funding benefits was not supported. However, for female entrepreneurs leading high-growth ventures, a similar hypothesis (H4) was supported for obtaining access and connections to potential investors or funders (Table IV; Investors OR=1.71, $p<0.05$). Our results indicate that female leaders in high-growth startups placed greater value on meeting investors or funders than other ventures. Turning to knowledge transfer benefits, our hypothesis H5 was supported. There were no significant differences between valuation of these benefits between ventures (Table IV; Business Skills OR=0.97, $p>0.10$ and Mentoring OR=0.70, $p>0.10$). Our hypothesis H6 was also confirmed: There were no differences in how male- and female-led ventures valued networking benefits for high-growth ventures (Table IV; Networking OR=0.89, $p>0.10$ and Meet Others OR=0.75, $p>0.10$).

4.3. Robustness

To check the robustness of our estimates, we used an alternative gender variable: the percentage of females on the start-up team. (To address the issue of multicollinearity, we mean-centered this variable before calculating the interaction term, per Aiken and West (1991).) The results were very similar to our previous estimates and are presented in Table V. The summaries of testing these hypotheses are presented in Table III in parentheses. The results for funding benefits (H1 and H4) match previous results. For knowledge transfer benefits, the results match our previous results for business skills education (H2). Additionally, for the mentoring services, the effect was significant at 10% level and negative and significant for high-growth ventures, giving even more supporting evidence for hypotheses H2 and showing the reverse effect for H5 (as could be expected from the development of H5). For formal networking (H3), the hypothesis is supported at the lower significance level and matches the results of H6.

Insert Table V about here
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5. Discussion, implications, further work, and limitations

5.1. Summary

In this article, we used the RBV theory (Uhm et al., 2018; Mian et al., 2016; Kozlenkova et al., 2014) to develop a model of valuation of business accelerators' services for startups stratified by founder's gender. We explored venture growth stage as a moderator. By doing this, we extended the work of Lange and Johnston (2020) who were the first to take a user's perspective and highlighted to what extent entrepreneurs value business accelerators and what contributed to this value.

First, our findings indicate that out of all benefits provided by accelerators, entrepreneurs valued obtaining access and connections to potential investors or funders the most (mean 4.75 on the 1-7 scale with 1 being the lowest and 7 the highest). There were no significant differences on how male- and female-led ventures valued this benefit despite the fact that female entrepreneurs experience greater difficulties in obtaining external financing (e.g., Mijid, 2015). However, high-growth female-led ventures (in terms of employment growth) placed higher value on this benefit compared to others. This suggests that financial discrimination against women-led ventures may be happening at the higher level of venture growth. In fact, Eddleston et al. (2016) also uncovered that, compared to men, women entrepreneurs received less bank financing on the basis of having a high number of employees but found no significant differences in gender overall. This is unfortunate as ventures that grow and hire employees are the most valuable for the economy (Terjesen et al., 2016). We also found that gender did not significantly affect the

value placed on the direct funding from accelerators, such as grants or direct investment, and this benefit was overall ranked 4th out of 6 by all entrepreneurs (mean 4.43).

Second, we found that female entrepreneurs placed higher value on the transfer of knowledge benefit of the development of business skills (e.g., finance and marketing skills), but this benefit was ranked relatively lower by all ventures (5th out of 6 benefits; mean 3.49). As expected, for high-growth ventures, there were no significant gender differences. Male and female entrepreneurs valued the transfer of knowledge benefit of mentoring similarly (this benefit was ranked 3rd out of 6; mean 4.57). Among high-growth ventures, the higher the percentage of females on the team, the lower the valuation of mentoring services.

Third, female entrepreneurs placed significantly lower value on accelerators' network benefits, especially informal (meeting others). Overall, meeting others was valued the lowest out of all accelerator benefits (mean 3.07). For high-growth ventures, the value placed on networking benefits was not significantly different between genders. Previous literature confirms that networks of high-growth female entrepreneurs resemble male networks (in their diversity and size), while networks of low-growth female entrepreneurs are usually smaller, consist of family and friends, and are not gender diverse (Roomi, 2009).

These findings are largely consistent with our model and the RBV theory of business incubation (Mian et al., 2016). As stipulated by the RBV, organizations are collections of unique resources and capabilities, and a firm's performance is determined by the resources it owns. However, startups often lack many of the crucial resources, e.g., financial, physical, human, or technological. Thus, business accelerators are seen as a mechanism that could create supportive and entrepreneurial environments for startups. Promoting creation of accelerators is a promising policy tool that supports entrepreneurial growth (Etzkowitz, 2002; Hochberg, 2016).

Accelerators are designed to buffer startups from the external environment and bridge them to the resource-base necessary for supporting early development in this critical stage (Lalkaka, 2006). Consequently, there is impactful value in understanding the mechanisms that make accelerators help women startups, the subject we explored in this article.

5.2. Practical Implications

Our research has managerial implications as it provides insights into what services potential users find beneficial. We provide the stakeholders involved in accelerators with a clearer understanding of how to ensure that appropriate support and resources are available for specific client types. As our results suggest, overall, obtaining access and connections to potential investors or funders and external networking development (e.g., contacts with potential partners and customers) were the top two ranked business accelerators' benefits (followed by, in order, mentoring, direct funding, development of business skills, and meeting other like-minded entrepreneurs). Therefore, it is crucial that all accelerators focus on these top valued benefits. This can be done by organizing *Investor Days* facilitating contacts with investors and funders, *Demo Days* where startups pitch their businesses to large audiences of potential investors, offering databases of potential funders, providing referrals, or keeping investor pools consisting of individual investors, corporations and public organizations (Uhm et al., 2018). As external networking is the second most valued benefit and mentoring ranks third, it is crucial to provide opportunities to meet with networks of mentors with expertise in a variety of areas, organizing events that bring experts and industry representatives, have in-house teams of specialists offering office hours, provide networking support after graduation from the program, keeping databases of potential networks, and keep close relationships with graduated companies to invite them to the program to share their experiences (Uhm et al., 2018).

Our results show that there are differences in the valuation of accelerator services by gender. Business accelerators with the focus on helping female ventures (those with women-leaders or greater percentage of female founders) need to place more importance on transfer of knowledge benefits, especially business skills development, and less importance on networking (both formal and informal). Additionally, these accelerators need to recognize the greater importance of access and connections to potential investors or funders especially for female ventures that hire employees. This introduces the idea of extending support by not only considering venture development stage but also taking into account the different demographic characteristics of owners. Accelerator managers should thereby carefully consider what support is really needed and how it is best obtained by different customers types. They should not assume that accelerator firms are homogeneous in their value placed on different accelerators' services.

Our conclusions serve as a helpful guide to accelerator administrators and marketers to do proper due diligence in marketing their offerings to the entrepreneurs who fit their offerings. For example, when the accelerator focuses on business skills development, marketing campaigns should be more focused on women. When serving start-ups that hire employees, administrators should invest in programs that provide connections to funders and investors and advertise those especially to female founders. Business accelerators' marketing efforts to women entrepreneurs need to de-emphasize networking benefits (especially to those ventures with high percentage of female funders on the team), emphasize business skill development (especially to ventures with no employees), and emphasize external funding opportunities (especially to ventures with a fast growth in the number of employees).

Finally, for prospective users, it is crucial to research offerings provided by accelerators as these vary significantly. Some accelerators are specifically focused on women entrepreneurs. However, this does not guarantee that they offer services that are most valuable for a given venture. Our findings suggest a more complex picture as the valuation of services depends on venture growth stage for female entrepreneurs.

Lange and Johnston (2020) pointed out that program fit, especially business fit to the accelerator, significantly impacts program value. It is important to comprehend the needs and wants of accelerator firms and make sure that the accelerator links firms to the most appropriate benefits. This can be approached in two ways. First, to provide incumbent firms what they *want*. Second, to assess what startups actually *need* (van Weele et al., 2017). Our research indicates that startup growth stage influenced the value placed on accelerator benefits. Accelerators' in-depth intake interviews may be needed to assess if entrepreneurs have enough self-awareness to correctly value the resources provided by the accelerator. The demand-driven approach to provide services to start-ups may not be successful if entrepreneurs are not able to correctly identify their needs.

5.3. Limitations and Further Work

As with all studies, there are limitations to our work that offer avenues for further research. First, we limited our sample to U.S.-based startups to avoid country-dependent confounding factors, but our analyses can be readily extended to other countries or geographic regions. Second, it would be interesting to see if our results apply to business incubators, as we specifically focused on business accelerators. Other services provided by incubators can be researched (e.g., shared offices). Third, we focus specifically on gender and venture growth stage, but other demographic and venture characteristics could be examined (e.g., entrepreneur's education and previous start-

up experience, venture social orientation, industry sectors). Additionally, literature on tribal or heritage entrepreneurship is growing (Welter, 2011). These populations may have very specific needs that could be addressed by business accelerators. Third, our data on valuation of business accelerator services were collected at the time of application to accelerators. It would be interesting to see if the value placed on the services changed after the venture graduated from the program. Fourth, we defined high-growth ventures in terms of the number of employees. Alternative definitions may be used (e.g., sales) in future research. Also, our sample includes a big proportion of service startups which is not unusual for new firms (Kwapisz and Hechavarría, 2017). In all our regressions, we control for industry effects. However, further research may focus on a specific industry (e.g., technology startups). Additionally, further research could investigate whether the valuation of accelerator services translates to venture success over the years (data on venture performance after completing the program are available in the dataset used in this study). Finally, more in-depth interviews with specific groups of customers (based on gender or other venture and demographic characteristics) could provide more information on reasons behind their valuation of various accelerator services and enhance the theory building in the field.

5.4. Conclusion

We addressed the following questions: What do entrepreneurs value in business accelerators and how this differs for women- and men-led ventures? Is venture growth mediating this relationship? Our main findings are that different categories of ventures differ in the value they place for specific accelerator programs. Compared to male entrepreneurs, female entrepreneurs value more business skills development and less networking, whereas female entrepreneurs who hire employees place more value on securing funding from outside investors.

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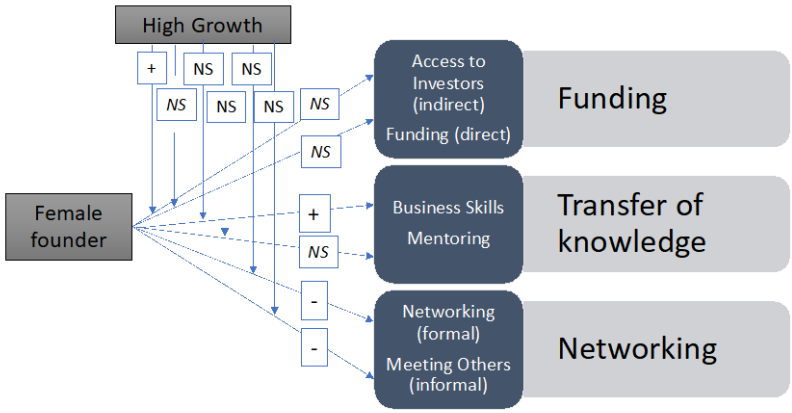
Figure 1
Results of main and interaction effects models of Female-led ventures and High Growth



Notes: "NS" denotes no significant relationship at any significance level; "+" and "-" positive and negative significant effects, respectively.

Table I
Accelerator benefits (1-7; with 1 being the least and 7 being the most valuable)

	Total	Female	Male	Difference	t-test
Investors	4.75	4.70	4.80	0.10	-1.16
Networking	4.68	4.54	4.78	0.24	-2.57**
Mentoring	4.57	4.69	4.51	-0.18	2.05**
Funding	4.43	4.55	4.43	-0.12	1.17
Business Skills	3.49	3.71	3.31	-0.40	4.05***
Meet Others	3.07	2.88	3.13	0.25	-2.84***

The asterisks, *, **, and *** indicate significance at the 10%, 5%, and 1% level, respectively.

Table II
Descriptive Statistics

Variable	Mean	S.D.	Min	Max	*N*
Continuous Variables					
Percent Females	0.29	0.38	0	1	1929
Age	36.20	11.27	17	85	1914
Team Size	2.57	1.57	1	23	1938
Startup Age	1.76	1.84	0	10	1984
Likert Scale					
Accelerator benefits:					
Networking	4.68	1.89	1	7	1986
Business Skills	3.49	1.96	1	7	1985
Mentoring	4.57	1.78	1	7	1985
Investors	4.75	1.76	1	7	1985
Funding	4.43	2.05	1	7	1984
Meet Others	3.07	1.82	1	7	1985
Binary and Categorical Variables					
Female	Female first founder: 29.7 percent				1929
High-growth	Hired one or more employee per year: 23.8 percent				1984
Prior accelerator	Participated in a prior accelerator program: 26.3 percent				2009
Start Experience	Funder has previously founded a venture: 52.5 percent				2009
For Profit	For profit: 74.9 percent				2009
Any Social Motives	Intent of creating social/environmental impacts: 89 percent				2009
Intellectual Property	Copyright, trademark or patent: 46.1 percent				2009
Own Investment	Founders put any money into the business: 64.8 percent				2009
Education	None: 0.2 percent				2009
	Less than 9th grade/Middle school: 0.3 percent				
	High school: 7.2 percent				
	Associate Degree/Technical/Vocational degree: 3.9 percent				
	Bachelors degree: 39.2 percent				
	Some graduate degree/Masters Degree/PhD: 49.3 percent				
Sector	Distribution: 15.5 percent				2009
	Production / Manufacturing: 25.2 percent				2009
	Financial Services: 14.2 percent				2009
	Services: 66.8 percent				2009
	Processing / Packaging: 8.3 percent				2009
	Wholesale / Retail: 16.8 percent				2009
	Unsure: 4.9 percent				2009

Data Source: Entrepreneurship Database Program at Emory University.

Table III
Hypotheses results summary

Benefit	Female-led (Female %) All Ventures	Female-led (Female %) High-growth Ventures	Comments
Funding	**H1**: Female entrepreneurs place higher value on accelerators' funding benefits.	**H4**: Female entrepreneurs leading more high-growth ventures place higher value on accelerators' funding benefits.	• Female and male entrepreneurs place similar value on accelerators' funding benefits • Female entrepreneurs leading more high-growth ventures place higher value on accelerators' funding benefits
Investors	Not supported (Not supported)	Supported (+)** (Supported (+)**)	
Funding	Not supported (Not supported)	Not supported (Not supported)	
Transfer of knowledge	**H2**: Female entrepreneurs place higher value on accelerators' transfer of knowledge benefits.	**H5**: Female entrepreneurs leading more high-growth ventures place similar value on accelerators' transfer of knowledge benefits.	• Female entrepreneurs place higher value on accelerators' business skills training benefits. • Female entrepreneurs leading more high-growth ventures place similar value on accelerators' transfer of knowledge benefits.
Business Skills	Supported (+)*** (Supported (+)***)	Supported (Supported)	
Mentoring	Not Supported (Supported*)	Supported (Not supported (-)**)	
Networking	**H3**: Female entrepreneurs place lower value on accelerators' network benefits.	**H6**: Female entrepreneurs leading more high-growth ventures place similar value on accelerators' network benefits.	• Female entrepreneurs place lower value on accelerators' network benefits. • Female entrepreneurs leading more high-growth ventures place similar value on accelerators' network benefits.
Networking	Supported (-)* (Supported (-)**)	Supported (Supported)	
Meeting Others	Supported (-)** (Supported (-)**)	Supported (Supported)	

For one-tail hypotheses, the asterisks, *, **, and *** indicate significance at the 10%, 5%, and 1% level, respectively.

Table IV

Accelerator Benefits. Only coefficients on Male/Female and Growth stage are reported.

Variable	Networking		Business Skills		Mentoring		Investors	
	O.R. (S.E.)	O.R. (S.E.)	O.R. (S.E.)	O.R. (S.E.)	O.R. (S.E.)	O.R. (S.E.)	O.R. (S.E.)	O.R. (S.E.)
Main Effects:								
Female	0.82*	0.84	1.42***	1.43***	1.13	1.22*	0.91	0.81*
	(0.10)	(0.11)	(0.10)	(0.12)	(0.10)	(0.11)	(0.10)	(0.12)
High-growth	1.21*	1.24*	1.05	1.05	0.78**	0.85	1.15	1.01
	(0.11)	(0.13)	(0.11)	(0.12)	(0.11)	(0.13)	(0.11)	(0.12)
Interaction Effect:								
Female x High-growth	---	0.89	---	0.97	---	0.70	---	1.71**
		(0.24)		(0.2)		(0.24)		(0.25)
Number of observations	1587	1587	1586	1586	1586	1586	1586	1586
Log- Likelihood	-2951	-2951	-2977	-2977	-2942	-2941	-2902	-2900
AIC	5949	5951	6003	6005	5933	5933	5853	5850
McFadden Pseudo R^2	0.21	0.21	0.22	0.22	0.21	0.21	0.21	0.21

Results from ordered logistic regressions on the rating of accelerator benefits. Odds Ratios (O.R.) and Robust Standard Errors (S.E.) are reported. Robust standard errors are in brackets. The asterisks, *, **, and *** indicate significance at the 10%, 5%, and 1% level, respectively.

Table IV cont.

Accelerator Benefits. Only coefficients on Male/Female and Growth stage are reported.

Variable	Funding		Meet Others	
	O.R. (S.E.)	O.R. (S.E.)	O.R. (S.E.)	O.R. (S.E.)
Main Effects:				
Female	1.07	1.01	0.77**	0.82
	(0.10)	(0.12)	(0.10)	(0.12)
High-growth	0.97	0.91	0.97	1.04
	(0.11)	(0.12)	(0.11)	(0.12)
Interaction Effect:				
Female x High-growth		1.29		0.75
		(0.25)		(0.25)
Number of observations	1586	1586	1586	1586
Log- Likelihood	-3018	-3018	-2904	-2903
AIC	6085	6085	5855	5856
McFadden Pseudo R^2	0.21	0.21	0.20	0.20

Results from ordered logistic regressions on the rating of accelerator benefits. Odds Ratios (O.R.) and Robust Standard Errors (S.E.) are reported. Robust standard errors are in brackets. The asterisks, *, **, and *** indicate significance at the 10%, 5%, and 1% level, respectively.

Table V

Robustness Test (%Female): Accelerator Benefits. Only coefficients on Male/Female and Growth stage are reported.

Variable	Networking		Business Skills		Mentoring		Investors	
	O.R. (S.E.)	O.R. (S.E.)	O.R. (S.E.)	O.R. (S.E.)	O.R. (S.E.)	O.R. (S.E.)	O.R. (S.E.)	O.R. (S.E.)
Main Effects:								
%Female	0.76**	0.77*	1.49***	1.59***	1.28*	1.44***	0.86	0.75**
	(0.12)	(0.14)	(0.13)	(0.14)	(0.13)	(0.14)	(0.13)	(0.14)
High-growth	1.21*	1.21*	1.04	1.02	0.78**	0.76**	1.15	1.18
	(0.11)	(0.11)	(0.11)	(0.11)	(0.11)	(0.11)	(0.11)	(0.11)
Interaction Effect:								
%Female x High-growth	---	0.96	---	0.73	---	0.55**	---	2.03**
		(0.31)		(0.32)		(0.30)		(0.31)
Number of observations	1587	1587	1586	1586	1586	1586	1586	1586
Log- Likelihood	-2950	-2950	-2978	-2978	-2941	-2939	-2902	-2899
AIC	5949	5951	6005	6006	5930	5928	5852	5849
McFadden Pseudo R^2	0.21	0.21	0.22	0.22	0.21	0.21	0.21	0.21

Results from ordered logistic regressions on the rating of accelerator benefits. Odds Ratios (O.R.) and Robust Standard Errors (S.E.) are reported. Robust standard errors are in brackets. The asterisks, *, **, and *** indicate significance at the 10%, 5%, and 1% level, respectively.

Table V cont.

Robustness Test (%Female): Accelerator Benefits Only coefficients on Male/Female and Growth stage are reported.

Variable	Funding		Meet Others	
	O.R. (S.E.)	O.R. (S.E.)	O.R. (S.E.)	O.R. (S.E.)
Main Effects:				
% Female	1.12	1.03	0.75**	0.79*
	(0.13)	(0.14)	(0.13)	(0.14)
High-growth	0.97	0.99	0.97	0.96
	(0.11)	(0.11)	(0.11)	(0.11)
Interaction Effect:				
% Female x High-growth		1.53		0.75
		(0.31)		(0.31)
Number of observations	1586	1586	1586	1586
Log- Likelihood	-3018	-3017	-2904	-2904
AIC	6084	6084	5857	5858
McFadden Pseudo R^2	0.21	0.21	0.20	0.20

Results from ordered logistic regressions on the rating of accelerator benefits. Odds Ratios (O.R.) and Robust Standard Errors (S.E.) are reported. Robust standard errors are in brackets. The asterisks, *, **, and *** indicate significance at the 10%, 5%, and 1% level, respectively.