Barriers, Challenges, and Benefits: Gender Diversity in Technology-Based New Venture Team Innovation

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Abstract: This paper introduces the early phase of research designed to unpack the phenomenon of gender diversity in technology new venture teams including its barriers, potential benefits, and challenges. We present some preliminary case study findings from 13 interviews with team members from three technology new ventures in Indonesia. This research setting allows us to investigate a unique cultural context in a developing country. The present study addresses a significant research gap by elucidating various viewpoints of new ventures towards gender diversity within the same institutional context, thereby enabling a nuanced understanding of their ability to leverage the potential benefits of gender-diverse teams for innovation. Specifically, our findings reveal that new ventures have different abilities to navigate the barriers and challenges associated with gender diversity. This study identified three distinct barriers, namely the acquisition of gender-balanced applicants, the mitigation of gender-specific bias, and the effective management of dynamics team composition. In addition to the potential benefits of having a gender-diverse team, such as enhanced collaboration, balanced thinking, and inter-group competition, our research has identified three significant challenges. These include the need to overcome cultural and social norms that hinder gender diversity, effectively managing diversity management practices, and improving employee engagement and a sense of belonging. The initial results of our study offer some practical and theoretical implications for enhancing the potential of new ventures to leverage the advantages of gender-diverse teams to promote innovation. These we aim to study further as the doctoral investigation advances further through more extensive case study analysis.

Keywords: Gender Diversity, Innovation, Technology New Ventures Teams

1. Introduction

Previous studies on gender and innovation have focused on quantitative analysis and thereby lacked critical insights on how these concepts interplay with each other over time. As a result, the findings have been inconclusive, with some studies reporting positive effects (Dai, Ye et al., 2019; Ritter-Hayashi et al., 2019), negative (Cropley and Cropley, 2017; Schneid et al., 2015) and insignificant impact (Biga-Diambeidou et al., 2021; Roh and Koo, 2019). Such results lead to further unsolved research questions and problems on their relationship whether that can be found to be “positive” or “negative”.

It is a plausible assertion that certain companies may reap advantages from having a gender-diverse team, whereas others may encounter difficulties. Gender diversity in a team could increase innovation performance as the team would have access to different resource pools and networks that could impact the quality and quantity of idea generation in innovation (Schneid et al., 2015). On the other hand, it might raise the potential for a conflict (Der Foo et al., 2005; Chowdhury, 2005) which is detrimental to innovation.

With regards to the prior arguments, it is surprising that previous research did not fully address the issue of how gender diversity benefits firms and what challenges that firms should foresee to grasp the potential advantages of having “gender-diverse” teams. Moreover, the change in the demographic composition of women in the workforce increases the need for a more thorough understanding of the potential benefits and challenges of creating such a team. Abels (2012) argued “the failure to involve women in the innovation process could be perceived as an unacceptable waste of human resources” reducing the probability of innovation success.

As stated, understanding the potential benefits and challenges of having a gender diverse team might support firms to stimulate their innovation. Drawing from previous research which mostly focus on the established firm, the context of gender diversity in a new venture team has been neglected, while it is argued that small firms have greater difficulties capturing the benefit of a gender-diverse team (Teruel and Segarra, 2017). Therefore, by exploring new venture contexts, this research aims to explain the reason behind the results, specifically in the IT sector, where women are infrequently encountered.

Given those previous arguments, the research question then becomes, “How do new ventures understand the barriers, challenges, and potential benefits of having a gender-diverse team to support innovation?” To address this question, we have interviewed 13 new venture team members from three different start-ups to understand
their experience in a gender diverse team. These new ventures were purposefully selected to capture different gender compositions. Through these interviews, we were able to identify the barriers, challenges, and potential benefits of having a gender-diverse team.

There are several contributions made by our study. First, this research provides some preliminary empirical evidence, from an emerging country, of how new ventures have different approaches to creating gender diversity in their teams. Second, our study pinpoints the barriers, benefits, and challenges of maintaining gender diversity in a new venture team. Hence, this research aims to provide a practical contribution to help new ventures develop diversity management practices to support innovation.

In the forthcoming section, we provide a comprehensive exploration of the aforementioned unit of analysis, aiming to develop our knowledge and understanding. Subsequently, we outline the methodology adopted to conduct the research investigation, offering insight into the approach we have employed to gather and analyze the data collected. This includes details of the setting where the research was conducted. Then, we present the results, followed by a detailed discussion and interpretation of these findings. Finally, we conclude with a synthesis of the key findings and their implications, emphasizing the critical significance of this study.

2. Literature Review

According to social role theory, gender is an important factor mediating human behaviours (Eagly, Alice H et al., 2000). Gender-diverse teams will allow combinations of knowledge from individuals with different socialization histories (Ruiz-Jiménez et al., 2014). From an information-processing perspective, gender diversity will lead to a more diverse pool of resources that could impact the quality and quantity of idea generation in innovation (Schneid et al., 2015).

As previously mentioned, prior research provided a strand of evidence that gender diversity in a team could influence innovation performance. It is argued that optimal innovation occurs when there is an equal mix of men and women in a team (Okoń Horodyńska and Zachorowska-Mazurkiewicz, 2015). There is some evidence that suggests a significant and positive impact of gender diversity on innovation performance (Dai, Ye et al., 2019; Marinova et al., 2015; Ritter-Hayashi et al., 2019).

Nevertheless, alternative studies have presented conflicting results, suggesting that gender diversity does not have a substantial influence on innovation performance. (Biga-Diambeidou et al., 2021; Roh and Koo, 2019). Men and women show no differences in their innovativeness (Steyn and de Bruin, 2020; Nählinder et al., 2015), Cropley and Cropley (2017) and Schneid et al. (2015) found a significant negative impact of gender diversity on innovation performance. The caused of which is a social categorization process, amplified by national culture, whether it is collectivistic or individualistic societies. However, it is uncertain how new ventures within the same institutional context will follow this rationale. Therefore, there is a need to find an answer to a straightforward research problem: how does gender diversity improve innovation performance in new ventures within the same institutional context?

A new venture is relevant for this study since innovation is a crucial aspect for a new venture to survive when entering the industry. However, new ventures have to face complex challenges to maximise their limited resources in order to innovate. Teruel and Segarra (2017) argued that smaller firms have difficulties capturing the benefits of having a gender-diverse team. They argue that even though smaller firms have more flexible organisational structures, they are not equipped with specific tools and skills to optimise the potential of their human resources, nor can they cope with the potential problem caused by either creating or maintaining gender diversity in a team. This research provides a supportive argument that exploring new ventures is relevant since they are the ones that usually fail to benefit from gender diversity. Moreover, the focus on technology new ventures will give some valuable insight since the scarcity of female entrepreneurs in the IT industry renders their perspectives and knowledge highly valuable resources to firms, given the prevailing male dominance in this industry (Dai, Y. et al., 2019).

3. Methodology

To address our primary research question, we have undertaken a qualitative approach through multiple case studies. Multiple-case study research is appropriate as the nature of the research question is used to explore new topic areas that have not been extensively studied in the real-world context (Eisenhardt, 1989; Yin, 2018). More for our work the underdeveloped nature of gender diversity scholarship in an emerging economy context necessitated it. We are investigating five cases but two of these are not sufficiently developed enough to present...
here therefore we are presenting the results from three of them. Case study is relevant to be used to answer a research question that requires an extensive and in-depth approach to a phenomenon (Yin, 2018). One of the key advantages of doing a case study is the ability to obtain plausible explanations of causal relationships from theoretical constructs that have been conceptually developed through the framework (Siggelkow, 2007).

3.1 Data Collection

In this research, a technology new venture team is the unit of analysis. By adopting multiple case studies, three cases were purposefully chosen to represent the variation in their gender composition. To gather rich and in-depth data to explore the phenomenon of gender diversity in a new venture team, in-depth interviewing was conducted using a semi-structured approach. The objective was to cover all different hierarchical levels in new ventures, and to disseminate their different views on their experience in a gender-diverse team. The researcher constructed the interview guide using open-ended questions, specifically to derive answers from the participants that might not be considered by the researcher as well as to reduce bias. During this stage, 13 interviews were conducted. Each interview took approximately 45 minutes to an hour.

3.2 Data Analysis

The data analysis was divided into two stages. In the first stage, within-case analysis was conducted for each case. Adapted from thematic analysis (Braun and Clarke, 2022), this stage involved six steps: familiarisation with the data, creation of initial codes, searching for themes, reviewing the themes, defining and naming themes, and producing the report. The analysis process was conducted using NVivo 12. In the second stage, cross-case analysis was conducted, and the narratives between the three cases were visualised using tables and figures to enable comparison. The outcome of this phase led to a better understanding of the barriers, challenges, and potential benefits that were being faced by the new venture.

3.3 Research Setting

To capture a unique situational context, this research was conducted in Indonesia. Indonesia provides a unique research setting as it represents an emerging country without any notable prior study of our research topic. Compared to developed countries such as the US, the UK, and the EU countries where the topic is mature and well researched. Indonesia provides a different socio-cultural context. For example, compared to those countries, Indonesia has a higher “power distance level” between male and female workers, meaning that workers and managers are members of organizations that expect and accept that power is distributed unequally.

Turning to other aspects, Indonesia also adopts a collectivistic culture. It means that there is a high preference for a strongly defined social framework in which individuals are expected to conform to the ideals of society and the in-groups to which they belong (Hofstede et al., 2010). Therefore, gender diversity in the IT sector is hard to achieve since it is a patriarchal structure that mainly operates in Indonesia. However, interestingly there is evidence that 26% of women are involved in entrepreneurship activities, whilst 60% of micro, small, and medium-sized firms in the country are women-owned (Agussani, 2020). Therefore this unusual context provides an interesting opportunity to build and inform theory on gender diversity in new ventures. As the institutional support seems lacking unlike in developed countries yes we are still seeing a relatively high level of woman in new venture activity.

4. Results

In the results we present some sample evidence from the initial investigation analysis. This highlights some of the salient key points quickly observed from initial coding and transcript interpretations.

4.1 Case Introduction

Case 1 – Milk.Co

Milk.Co is among the first of alumni of 1000 start-up digital, a program initiated by the government to enhance start-up growth in Indonesia. Milk.Co developed a mobile application which provided on-demand services for breastmilk donor and the recipient. It also functioned as a crowdfunding platform that enable member to support the recipients in need. However, following the resignation of team member who focused on IT development, Milk.co defined itself as a social enterprise and used less advanced technology. They decided to use foundation as their legal form to gain public trust. Consequently, they have difficulties broadening their
business model to gain profit. In the near future, they intend to establish a subsidiary in the form of a limited company with the aim of increasing profitability and enhancing operational flexibility. Their current activities are focused on recruiting donors, screening them, and distributing breastmilk to recipients through an Android-based mobile application. Initially, Milk.Co had a male-dominated team consisting of five men and one woman. However, following the resignation of a previous team member, the CEO then recruited more women, arguing that they represented their target market. Currently, the composition is reversed and becomes female-dominated, comprising nine women and three men.

Case 2 – Shrimp.Co

Shrimp.Co aims to develop an integrated application with a device to support farmers in increasing their crop yields through mitigation of failure risks and sustainable farming practices. As a limited company, they develop several revenue streams, not only selling devices and apps but also assisting farmers in cultivation, post-production and shrimp trading. Apart from profit-oriented activities, they are also active in promoting gender diversity in aquaculture by adopting Gender Active Learning System (GALS) to increase women's participation in the aquaculture sector. In addition, they consistently assess and monitor their impact through the establishment of a dedicated impact department. In its early stages, the team composition was predominantly male, with one female member and seven male members. However, with good diversity management practices, it could improve women's representation by up to 37% within two years. The policy that supports gender diversity is well-developed, and they constantly enhance their corporate culture to ensure that all team members are provided with an inclusive and supportive working environment.

Case 3 - Cop.Co

Cop.co is a start-up that focuses on developing Enterprise Resource Planning (ERP) to enable co-operatives to digitalize their business processes. Case 3 also supports their co-operative to connect to a larger co-operative ecosystem and strengthen their network to enhance the business. Cop.co has a strong relationship with the Ministry of Cooperatives and SMEs of the Republic of Indonesia, which have the same mission of digitising their Indonesian co-operative. In three years, they have helped digitise no less than 700 cooperatives across over 12 provinces. Their aim is to assist cooperative management to be more efficient, transparent, and accountable. Cop-Co was established by five people, consisting of one woman and three men. After receiving seed funding, they recruited more team members and are currently operating with 19 gender-balanced team members. The CEO believes in gender diversity, but he also acknowledges that the current composition is naturally formed.

4.2 Comparative Analysis Across the three cases

4.2.1 Barriers

Gender diversity is prioritised in some circumstances yet achieving it may be difficult. In fact, new ventures need to overcome some barriers such as the difficulties on increasing gender-balance applicant, getting reliable human resources, overcoming gender specific bias, and managing dynamic team composition.

Table 1: Barriers to have gender diversity in a technology new venture teams

<table>
<thead>
<tr>
<th>Themes</th>
<th>Sub-Themes</th>
<th>Example Quote</th>
</tr>
</thead>
<tbody>
<tr>
<td>Barriers</td>
<td>Increasing Gender-Balance</td>
<td>“Even though in some cases, I mean that from the side who applied for the position, it’s not like what I expected. It can be balanced, but mostly some positions are dominated by men, some others are dominated by women. It’s something like that”.</td>
</tr>
<tr>
<td></td>
<td>Applicant</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Getting Reliable Human</td>
<td>“It was just yesterday that we were recruiting. The qualifications of men are still much better than woman and even if there are woman when it comes to the offering, most of them applying are men [who accept the offer], right, because woman are usually constrained by their parents’ blessing for moving to another region like that, so there are still more men there”.</td>
</tr>
<tr>
<td></td>
<td>Resources</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Overcoming Gender-Specific</td>
<td>“It’s quite rare for girls to be in the field, so for example when we hire, in the end, the one that are capable of or the one who wants to go around are mostly male….it might be because they think it’s a man’s job”.</td>
</tr>
<tr>
<td></td>
<td>Bias</td>
<td></td>
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</table>
4.2.2 Potential Benefits

Although different cases have different views on gender diversity in a team based on their experience, each case describes some of the advantages of having a gender-diverse team. Those identified the advantages then categorised them into three different themes: achieving balanced thinking, collaboration, and inter-group competition.

<table>
<thead>
<tr>
<th>Themes</th>
<th>Sub-Themes</th>
<th>Example Quote</th>
</tr>
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<tbody>
<tr>
<td>Managing Dynamic Team Composition</td>
<td></td>
<td>&quot;When we talk about team composition. We cannot force them to stay. So the composition were five people, two of them were developers, one of them was a designer and the rest were Mrs. L and I. In 2018, three of them decided to resign&quot;.</td>
</tr>
</tbody>
</table>

4.2.3 Challenges

All the benefits mentioned in the previous section would not come without any consequences. Some challenges might emerge from a gender-diverse team that needs to be considered to benefit from them. If it is ignored, instead of having the advantage, negative impacts might occur. These challenges include overcoming cultural and social-norm barriers, improving engagement and belonging, and managing diversity management practices.

<table>
<thead>
<tr>
<th>Themes</th>
<th>Sub-Themes</th>
<th>Example Quote</th>
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<tbody>
<tr>
<td>Overcoming Cultural, social-norm barriers</td>
<td></td>
<td>&quot;For friends who are in the field. Maybe the challenge is more from the farmer, sometimes they respond more to men than to women&quot;.</td>
</tr>
<tr>
<td>Improving Engagement &amp; Belonging</td>
<td></td>
<td>&quot;But here you know, some people come, and some people go, so I cannot really be who I really am&quot;.</td>
</tr>
<tr>
<td>Diversity Management Practices</td>
<td></td>
<td>&quot;Given those facilities, it doesn't mean that the women can relax more than men, they both should have the same performance standards and have the same performance considerations&quot;.</td>
</tr>
</tbody>
</table>

5. Discussion

The analysis revealed that one of the barriers experienced by new ventures is difficulties in getting gender-balanced applicants due to the tendency of people to apply for a position in which the occupation’s stereotype matches their gender. This phenomenon has been explained in Social Congruity Theory, an extension of the social role theory proposed by Eagly, Alice H. and Karau (2002). This theory argues that the incongruity of gender roles will have negative consequences, which individuals tend to prevent. Some occupations might activate gender stereotypes. It is imperative to utilise gender-neutral terminology when referring to occupations. Therefore, it is important to make vacancies advertisement that could counteract these stereotypes. By doing this, the number of applicant might increase which also can potentially overcome second barrier which is getting reliable human resources.
Moreover, the findings reveal other barriers such as gender-specific bias, and managing dynamic team composition. It means that team members need specific training programmes to increase gender awareness and dynamic within the team. The main focus is on identifying implicit biases and challenging stereotypical gender norms, which have the potential to mitigate gender biases in the hiring process and performance evaluations during the selection phase (Rice and Barth, 2016).

This study also reveals some potential benefits of having gender-diverse teams. One of the potential benefits includes balanced thinking, which is argued to be one of the key elements supporting innovation (Ettlie et al., 2014) concluding that new ventures teams should be equipped with a balanced thinking style (Groves et al., 2011). Another benefit is collaboration. This finding confirms previous research, which indicates that the inclusion of women in a team significantly enhances its collaborative efforts (Bear and Woolley, 2011). Similarly, Nielsen et al. (2018) also argue that having gender diverse teams has the potential to facilitate scientific discovery and innovation. This argument is supported by recent evidence that indicates that gender-diverse collaborative teams generate more significant scientific breakthroughs (Yang et al., 2022). Surprisingly, having a gender-diverse team also triggers intergroup competition (Bornstein et al., 2002), which can be managed to boost productivity.

Moving towards the challenges, gender biases, specifically in technology-related fields, persist in Indonesia. When women encounter under-appreciation and limited opportunities to engage in decision-making processes, their capacity to improve performance may be neglected (Cropley and Cropley, 2017). Overcoming gender-specific bias in the workplace can be challenging, but it is important to ensure that firms can utilise the resources provided by the entire team members and realise the benefit of having a gender diverse team (Gurtler and Gurtler, 2019).

In relation to the second challenge, Georgeac and Rattan (2023) provided empirical evidence that fostering a sense of belonging is essential, particularly if an organization intends to avoid the potential negative consequences of a lack of commitment to diversity and inclusion. When team members experience a lack of a sense of belonging, they tend to display reduced levels of engagement, achievement, and subsequently performance (Cohen and Garcia, 2008).

Based on the challenges experienced by new ventures under study, we suggest that practising gender diversity management (DM) practices is paramount to overcoming some challenges. Kalev et al. (2006) identified three different practices of DM, including the need to establish a structure of responsibility, reduce bias through education and feedback, and prevent social isolation through networking and mentoring. Likewise, Turner and Merriman (2022) also emphasise the importance of management commitment to developing DM practices and policies to support diversity in the organization.

6. Conclusions

This study represents a pioneering effort in examining the process of new venture team development and its relationship with gender diversity. Looking at the influences on gender diversity and the subsequent mediating effect of it on innovation performance. The institutional context is negative towards it yet gender diversity is there and its growing due to the drive and determination of women to start up, build and develop new businesses and to contribute to innovation. Markets are consist of men and women consumers so there is a clear need for diverse teams to be involved in developing products.

This paper unravelled the fact that the ability of technology new venture teams to benefit from gender-diverse team are contingent upon its capacity to identify and address the barriers and challenges that may arise from having such a team. Those that demonstrate an awareness of barriers and challenges are the ones that are potentially capable of formulating diversity management strategies that foster a supportive and inclusive environment, which is important to promoting innovation.

Drawing from how contextual and different innovation performance is, future studies should pay less attention on ‘proving’ the impact of having gender diversity on innovation performance and be more focused on what the firm does to benefit from gender diversity to promote innovation. Demonstrating best practices to the organisation is a crucial aspect to consider since having a gender-diverse team does not necessarily improve innovation performance. Therefore, future research needs to explore the provisioning conditions, both internal and external, to support a gender-diverse team to promote innovation.
Acknowledgement

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References


