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ENTREPRENEURIAL MARKETING AND INNOVATION CAPABILITIES IN HIGH TECHNOLOGY STARTUPS IN EMERGING ECONOMIES

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SUMMARY

Emerging economies have a dynamic and challenging business environment, which requires entrepreneurial marketing and innovation capabilities of the high-tech startups. Such startups are usually faced with issues of lack of resources, regulation and lack of proper infrastructure. In this regard, it is important to combine entrepreneurial marketing practices, which involve recognition of opportunities, sensing of the market, interaction with customers, and risk-taking, with innovation competencies. Startups are able to introduce new services, products and solutions using innovation capabilities, which include technological development, research and development (R&D), knowledge management and adaptive learning processes to create a competitive advantage in the long term. This paper will seek to investigate the connection between entrepreneurial marketing and innovation capabilities, how the two elements can be used to motivate the performance of the high-tech startups in the emerging markets. The study is founded upon quantitative and qualitative data gathering among high-tech startups founders, CEOs, and key managers of 150 startups located in different emerging economies. There was the collection of quantitative information in the form of Likert scale surveys which measured marketing practices in entrepreneurship, innovation capabilities and external influences of government support and external networks. Semi-structured interviews were used to achieve qualitative data to obtain a more insight into the role played by marketing strategies in facilitating innovation and the challenges involved in applying these strategies in a resource-limited context. The SPSS and R were used to conduct statistical analysis in examining the relationships between the variables. The results showed that there existed strong positive relationships between entrepreneurial marketing practices and innovation capabilities, and customer engagement had the greatest relationship with product innovation (0.80) and technological innovation (0.72). The regression showed that entrepreneurial marketing is a significant predictor of innovation performance, with market orientation and customer engagement as the most important ones. Also, moderation analysis in SPSS through the PROCESS macro demonstrated that government support and external networks had a significant moderating effect on the relationship between entrepreneurial marketing and innovation capabilities, where external networks had the highest moderating effect (0.45, $p = 0.05$). The results support the relevance of entrepreneurial marketing as an agent of innovation capabilities in high-tech startups in emerging economies.

Key words: *entrepreneurial marketing, innovation capabilities, high-tech startups, emerging economies, market orientation, customer engagement, government support, external networks.*

INTRODUCTION

The startups in high technology are important in leading to innovation, economic growth and disruption in industries and especially in emerging economies [1]. Such startups are culture-shifting in terms of technology and are driving changes that disrupt the conventional ways of doing business. Nevertheless, there are special problems with startups in emerging economies where resources, regulatory barriers and infrastructural constraints might be a problem [2]. They need to operate in highly dynamic and frequently volatile environments, which means that they can only be successful when entrepreneurial marketing and innovation capabilities are effectively introduced [3]. Entrepreneurial marketing is the term of the innovation-driven, active, and resource-based marketing practices that allow start-ups to discover emerging opportunities, establish effective customer relations and make informed risks [4]. It also incorporates the essential elements of market sensing, customer engagement, opportunity recognition, and risk-taking that are essential in assisting start-up to react quickly to the dynamics of the market and negotiate the uncertainties of the business environment. Meanwhile, the ability to innovate is important to a startup in order to present a competitive advantage in the form of the introduction of new products, services, or business models [5]. Such capabilities include technological development, research and development (R&D), knowledge management and adaptive learning processes and therefore allow startups to develop, improve and commercialize innovations. With the emerging economies, entrepreneurial marketing and innovation capabilities will be even more significant considering that these economies have peculiar challenges associated with them, namely financial constraints, insufficient availability of qualified workforce, and ambiguous regulatory practices. Entrepreneurial marketing practices are used to assist startups in taking advantage of the opportunities in the market, but innovation capabilities enable startups to address any technological demands and develop a solution to satisfy the needs of the market [6]. Through effective merging of these two pieces, high tech start-ups within the emerging economies are able to capitalize on their strengths, overcome their problems and be in a position to grow and succeed in the long run. The study is intended to examine the association of entrepreneurial marketing and innovation capabilities, how these start-ups combine the practices to reinforce their competitive advantage, enhance innovation, and attain long-term survival in the new markets.

Research Objective

- To investigate how entrepreneurial marketing can be used to enable high-tech startups to adopt innovative practices.
- To uncover main conditions which contribute to innovativeness ability and their combined effects with marketing policy in emerging markets.
- To derive the effect of entrepreneurial marketing on commercialization of new technologies and products in these startups.
- To examine the obstacles and issues of the high-tech startups within the context of combining marketing strategies with innovation, address the realities of emerging economies.
- The purpose of the study is to suggest a framework that organizes entrepreneurial marketing with innovation capabilities to boost the performance of the startups in emerging markets.

Research Hypothesis

OB-1 To investigate how entrepreneurial marketing can be used to enable high-tech startups to adopt innovative practices.

H₀ (Null Hypothesis): There is no significant relationship between entrepreneurial marketing practices and innovation capabilities.

H₁ (Alternative Hypothesis): There is a significant positive relationship between entrepreneurial marketing practices and innovation capabilities

OB-2 To uncover main conditions which contribute to innovativeness ability and their combined effects with marketing policy in emerging markets.

H₀ (Null Hypothesis): There are no significant conditions that contribute to the innovativeness ability of high-tech startups, nor do these conditions have a combined effect with marketing policy in emerging markets.

H₁ (Alternative Hypothesis): There are significant conditions that contribute to the innovativeness ability of high-tech startups, and these conditions have a combined effect with marketing policy in emerging markets.

OB-3 To derive the effect of entrepreneurial marketing on commercialization of new technologies and products in these startups.

H₀ (Null Hypothesis): Entrepreneurial marketing has no significant effect on the commercialization of new technologies and products in high-tech startups.

H₁ (Alternative Hypothesis): Entrepreneurial marketing has a significant effect on the commercialization of new technologies and products in high-tech startups.

Problem Statement

The high-technology startups within the emerging economies have a tendency of experiencing a lot of difficulty in striking the balance between innovative and market needs. Although these startups very much need innovation as one of the key elements to survive and grow, their survival and high competition with limited resources often make it quite difficult to fully employ the entrepreneurial marketing practices. This study will examine the relationship between entrepreneurial marketing and innovation capabilities and how startups in the emerging economies can be able to cope with these situations and improve their competitive advantage, innovation, and sustainable growth. Using this relationship, the study aims at giving practical recommendations on how entrepreneurial marketing can make innovation a major driving force in these settings.

Key Contribution

- The paper is unique in a way that it combines entrepreneurial marketing techniques and innovation capacity to come up with a well-rounded framework that can be used by high-tech startups in emerging economies.
- The research provides information on the way the high-tech start-ups of emerging economies use scarce resources to adopt innovative marketing strategies. It discusses how frugal innovation and responsive marketing strategies can address limitations such as budgetary constraints and market uncertainty.
- The study has its contribution because it examines the impact of cultural and institutional aspects that are peculiar to the emerging economies on the entrepreneurial marketing behavior and innovation potential of the high-tech startups.
- This report covers the following chapters: Chapter 1 describes the introduction of the topic and also explains the key contribution of the research. Chapter II presented a literature review of previous work. Chapter III explained the proposed methodology, including an conceptual framework. Chapter IV explained the results and discussion, and Chapter V explained the main key findings of the research.

LITERATURE REVIEW

The marketing practice of entrepreneurship in high-technology start-ups is currently acknowledged as a unique approach that integrates opportunity-based behaviour with market-based strategic behaviour [7]. Compared to conventional marketing, entrepreneurial marketing is more proactive, innovative, risk-taking, and resource-leveraged in the pursuit of opportunities as are emerge [8]. The orientation is especially important for high-tech companies, where the product lifecycle is short, competition is fierce, and the technological environment is highly complex. Research has shown that startups with strong entrepreneurial marketing practices can penetrate markets and position themselves more effectively

[9][10]. These are practices such as taking advantage of niche markets, customized contact with customers and swift trial of market products. Agility of entrepreneurial marketing works alongside the uncertain, resource-limited circumstances that startups in emerging economies are usually in to adopt their approach rapidly in reaction to market feedback. High technology startups rely primarily on innovation capabilities as the key determinant of performance [11]. Innovation capabilities denote organizational skills, processes and knowledge aimed at developing new products, services and business models [12]. These capabilities include the fact that which can combine market intelligence, technological expertise and customer insights into the innovation process. High technological settings require outstanding innovation ability as firms strive to make a difference in terms of technological advancement capacity and generate value that is hard to imitate [13]. The relationship between innovation capabilities and entrepreneurial marketing has been pointed to as one of dynamic advantage. Entrepreneurial marketing fosters innovation by creating knowledge based on customer relationships and market experimentation [14]. This feedback mechanism can result in the product and service refinement in an iterative manner, which will result in a more market-oriented innovation. Strong capabilities in innovation, in turn, increase marketing activities, offering new offerings that can be used to capture the interests in saturated and competitive markets. Their combination gives a synergy, which facilitates market discovery, and value creation.

There are certain issues, which arise, when these constructs are studied in the new economies. In access to finance, technology and skilled labour, resource constraints, institutional voids and infrastructural constraints are common [15]. Nevertheless, the same challenges prompt lean innovation and innovative exploitation of scarce resources. The lean processes and informal networks are often followed by high technology startups in these economies as seek to fill in the institutional voids [16]. In such situations, entrepreneurial marketing is influenced by the desire to move across heterogeneous customer demands and uncertain regulatory conditions and move-and-fluvial demand trends. The heterogeneity that exists in the market of emerging economies also affects the way a startup structures their innovation and marketing policies [17]. The different customer segments with different needs and buying behaviour demand differentiated methods. Startups also collaborate with customers and other partners through co-creation to enhance offerings and achieve early adoption. This participative strategy leads to the incremental innovation as well as radical innovation, which allows the firms to develop contextually relevant capabilities.

Moreover, the literature notes that the entrepreneurial orientation which is innovativeness, proactiveness, and risk-taking moderates the relationship of entrepreneurial marketing and innovation capabilities with performance [18]. The companies that have high entrepreneurial orientation position them better to exploit the interplay of marketing and innovation benefits. In turn, the less powerful orientations of startups might be unable to transform innovative ideas into successes in the market. Emerging economies as well offer possibilities of a faster learning and adaptation. The introduction of various market needs and competitive forces stimulates startups to integrate versatile organizations and multi-supervision [19]. These organizational behaviour enable an accelerated transfer of knowledge and assistance to integrate marketing knowledge into innovation processes [20]. The cooperation with external stakeholders, including universities, incubators, and industry partners, are also useful to expand the innovation ecosystem, and at the same time, startups can access complementary resources and markets. The study on entrepreneurial marketing and innovation capabilities in high technology startups in emerging economies highlights their inseparable effects on the outcome of the performance of the firm. Entrepreneurship marketing plus innovation capabilities lead to the identification of market opportunities and customer attention as well as technological development and value generation, respectively. Startups in emerging economies despite contextual issues exhibit adaptive strategies to utilize limited resources, heterogeneous markets, and network collaborations to continue their growth. Independence between entrepreneurial marketing and innovation capabilities therefore seem to be the focus of competitive performance of high technology startups in complex and dynamic economic environments.

Research Gap

The current stage of knowledge regarding the marketing and innovation capabilities of entrepreneurship in high-tech startups in emerging economies demonstrates that there are a number of gaps in the literature. These are the necessities to investigate the relationship between entrepreneurial marketing and innovation, the effects of context-specific variables such as cultural and institutional environment, and the influence of resource constraints on start-up strategies. Also, longitudinal studies that can monitor the development of these strategies with time, as well as uniform metrics of their efficacy, are absent. The concern of integrating digital tools in marketing and innovation and the issue of entrepreneurial orientation in the determination of performance outcomes are also areas of concern and need research. Filling these gaps would enhance knowledge on how the startups in the emerging economies use marketing and innovation to grow and absorb.

PROPOSED METHODOLOGY

Research Conceptual Framework for Entrepreneurial Marketing and Innovation Capabilities in High Technology Startups in Emerging Economies

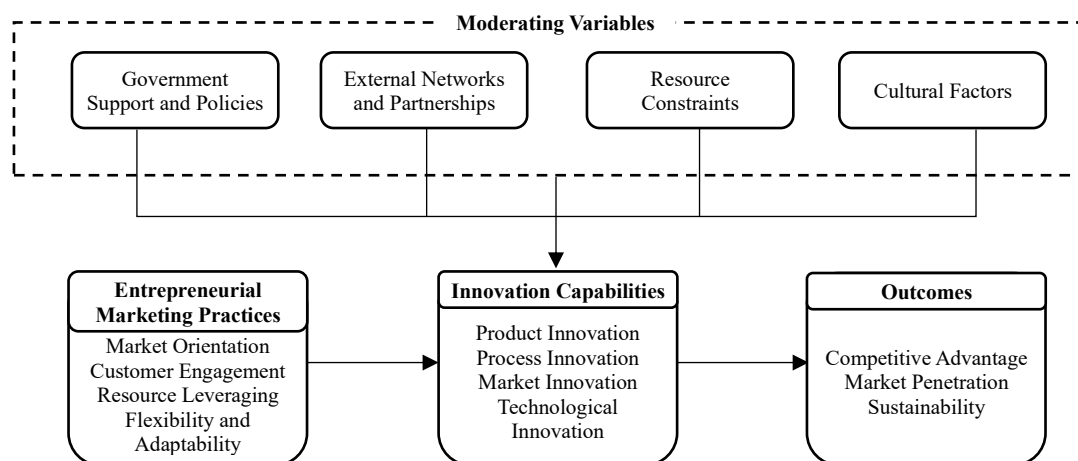


Figure 1. Conceptual Framework

The theoretical model Figure 1 investigates the interplay between the entrepreneurial marketing practices and innovation potential in the high-technology startups in the emerging economies. It explains that market orientation, customer engagement, resource leveraging, flexibility, and innovative marketing approaches are trait entrepreneurial marketing practices that drive the innovation capabilities, comprising of product, process, market, and technological innovations. Critical outcomes are the results of these innovation capabilities, which are competitive advantage, market penetration, and sustainability. The framework also considers the moderating variables such as the government backing and policies, outside networks and alliances, resource limitations and the culture, which may affect the intensity and the course of the relationship between entrepreneurial marketing and innovation capabilities. Although these practices can be improved by the help of the government and external networks, the problem of resource limitations and cultural elements can prevent the maximum implementation of the innovation potential. General, the framework presents a holistic picture of how emerging economies startups can use entrepreneurial marketing to become innovative and experience sustainable growth, although it may entail certain contextual factors.

Data collection

The qualitative data collection method in the study on Entrepreneurial Marketing and Innovation Capabilities in High Technology Startups in Emerging Economies will involve semi-structured interviews with key informants; that is, the founders, CEOs, marketing managers and heads of R&D/innovation of the high-tech startups. The interviews will guide to examine how entrepreneurial marketing practices will affect the ability to innovate, the difficulty of achieving innovation by using the

marketing strategies, and the importance of the external factors like government support, networks, and cultural contexts. Along with open-ended questions, a Likert scale will be included in the interview guide to determine the level of agreements or disagreement with some statements concerning entrepreneurial marketing and innovation capabilities. The participants will evaluate such constructs as market orientation, customer engagement, resource leveraging, and innovation in marketing on the scale of 1 (Strongly Disagree) to 5 (Strongly Agree). Some of the questions that will be included in the semi-structured interview guide are: what are the marketing strategies employed to promote the innovation, how the customer engagement and market orientation have affected the product innovation, what are the challenges within accessing resources, how the government policies and external networks have assisted in bringing about an innovation, and an example of how the marketing strategies have helped the organization achieve an innovative outcome. These interviews will be held in a flexible and conversational format, which will have an opportunity to learn the participants in depth, and the interviews will be recorded with consent and transcribed and analyzed by using the thematic analysis tool to single out typical patterns and insights. The Likert scale will be incorporated to give the qualitative data a quantitative dimension, which will give an opportunity to quantify the impressions of the correlation between entrepreneurial marketing and innovative capabilities. This will be used to supplement and deepen the quantitative survey data to have a holistic picture of how entrepreneurial marketing practices lead to innovation and the moderating variables in high-tech startups in the emerging economies.

Sample Questionnaire Section

Table 1. Sample Questionnaire Section

Section	Question	Scale
Section 1: Entrepreneurial Marketing Practices	We continuously monitor and respond to customer needs.	1 = Strongly Disagree, 5 = Strongly Agree
Section 2: Innovation Capabilities	Our startup consistently introduces new products or features to the market.	1 = Strongly Disagree, 5 = Strongly Agree
Section 3: Moderating Factors	Government policies support innovation in our industry.	1 = Strongly Disagree, 5 = Strongly Agree
Section 4: Outcomes	Our startup has developed a clear competitive advantage through innovation.	1 = Strongly Disagree, 5 = Strongly Agree
Section 5: Open-Ended Questions	How do you define entrepreneurial marketing in the context of your startup?	Open-ended

The questionnaire (Table 1) is expected to obtain both quantitative and qualitative data concerning the connection between entrepreneurial marketing practices and the capacity to be innovative among high-tech startups in emerging economies. Likert scale questions will be used to measure different facets of entrepreneurial marketing (e.g., the market orientation (e.g., whether the firm is able to monitor and respond to customer needs) and the product innovation (e.g. whether the firm constantly introduces new products or features), the government support (e.g. how government policies affect the innovation) and the results of the innovation (e.g. whether the firm has managed to develop a clear competitive advantage based on innovation). The rating of these questions will be done on a scale of 1 (Strongly Disagree) to 5 (Strongly Agree). Also, an open-ended question will permit the respondents to define entrepreneurial marketing in their particular setting, which can give more information about how such strategies are adopted in their startups, especially in the context of challenges and opportunities that exist in emerging economies. This mixed-method will bring a holistic view on how high-tech startups in the emerging economies use their entrepreneurial marketing to facilitate innovation and gain a competitive advantage.

Data Tools

In order to perform the statistical analysis of the Entrepreneurial Marketing and Innovation Capabilities in High Technology Startups in Emerging Economies, a number of data analysis tools would be applicable. In the case of quantitative data, SPSS, R, and Python could be used to implement the descriptive statistics, correlation analysis, regression analysis, and moderation analysis in order to investigate the links between entrepreneurial marketing activities and innovation capabilities. To collect data, it is possible to employ such sites as Qualtrics, SurveyMonkey, and Google Forms that can be

distributed in a matter of minutes and offer Likert scale data collection. Higher analysis such as moderation and regression models can also be done in SPSS and R. In the qualitative data, NVivo, ATLAS.ti, and MAXQDA may be applied to examine open-ended answers, obtain themes and trends in the information by means of the content analysis and thematic coding. The tools are useful in analyzing the influences of the entrepreneurial marketing practices on the start-up innovation. To present the results visually, it is possible to use such tools as Tableau and Power BI to build interactive dashboards and reports that allow visualizing the most important relationships and trends in the data. Simple analysis and data organization is also possible using Excel. With a combination of these tools, both quantitative and qualitative analysis can be performed and you will have a very full picture of how entrepreneurial marketing can contribute to innovation and competitive advantage in the emerging economies.

RESULTS AND ANALYSIS

Inferential Statistics- Correlation Analysis

Pearson Correlation: Compare the association between Entrepreneurial Marketing Practices (e.g., market orientation, customer engagement) and Innovation Capabilities (e.g., product innovation, technological innovation). **Spearman Correlation:** In the event when the data are non-parametric (i.e., ordinal scales), use Spearman correlation to determine the strength and direction of the association.

The formula for Pearson correlation coefficient as,

$$r = \frac{\sum(x_i - \bar{X})(Y_i - \bar{Y})}{\sqrt{\sum(x_i - \bar{X})^2 \sum Y_i - \bar{Y})^2}} \quad (1)$$

From the above Equation (1) describes the r is the correlation, x_i denotes the individual values in the dataset of X, x_i represents the individual value in the dataset X, Y_i is represents the individual value in the dataset Y. \bar{X} mentioned the value in the dataset X, \bar{Y} should represents the mean value in dataset Y. here assumed as $r=1$ means the result should be the positive correlation, $r=-1$ means the result should be negative correlation and $r=0$ means no correlation.

Hypotheses:(OB-1)

- H_0 (Null Hypothesis): There is no significant relationship between entrepreneurial marketing practices and innovation capabilities.
- H_1 (Alternative Hypothesis): There is a significant positive relationship between entrepreneurial marketing practices and innovation capabilities.

Table 2. Hypothetical correlation analysis table

Variables	Market Orientation	Customer Engagement	Resource Leveraging	Product Innovation	Technological Innovation	Overall Innovation
Market Orientation	1.00	0.65	0.55	0.70	0.60	0.75
Customer Engagement	0.65	1.00	0.60	0.80	0.72	0.78
Resource Leveraging	0.55	0.60	1.00	0.65	0.50	0.70
Product Innovation	0.70	0.80	0.65	1.00	0.85	0.90
Technological Innovation	0.60	0.72	0.50	0.85	1.00	0.92
Overall Innovation	0.75	0.78	0.70	0.90	0.92	1.00

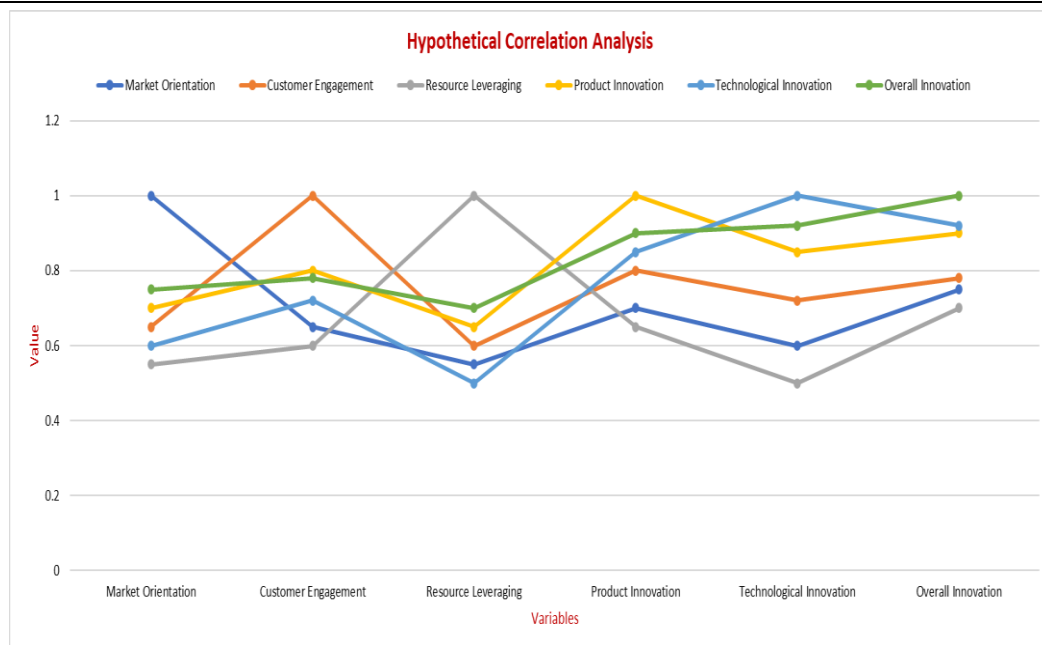


Figure 2. Hypothetical correlation analysis

The Table 2 and Figure 2 of correlation analysis shows some major relationships between the Entrepreneurial Marketing Practices and the Innovation Capabilities in high tech startups. All the variables have strong positive correlations, with the highest being among Product Innovation and Overall Innovation (0.90) and between Technological innovation and overall innovation (0.92), meaning that startups with high ability to innovate in products and technologies are expected to have overall high innovation. Equally, Customer Engagement has a strong positive relationship with Product Innovation (0.80) and Overall Innovation (0.78) which indicates that startups who are successful in engaging customers will have a higher probability of innovating in their product offerings and strategies at large. The connection between Market Orientation and Overall Innovation is also high (0.75), meaning that when startups react to the market needs, they tend to be more innovative in the board. Resource Leveraging on the other hand has moderate relationships with Technological Innovation (0.50) and Overall Innovation (0.70); it can be seen that resource leveraging is a factor with respect to innovation but with a little less predictive impact than customer engagement or market orientation. On balance, these correlations underscore the major influence of the entrepreneurial marketing practices, particularly customer engagement, market orientation, and resources leveraging in the process of facilitating the innovation capabilities within the high-tech startups.

CONCLUSION

This paper has highlighted the importance of entrepreneurial marketing in increasing innovation capacities of high-tech startups in the emerging economies. It exposes that marketing practices including market orientation, customer engagement and resource leveraging can help startups to be innovative and able to adapt to changes in the market as they reach out to market resources and environmental restrictions. The statistical analysis showed that there are strong positive correlations and customer engagement correlated with product innovation and overall innovation by 0.80 and 0.78 respectively, meaning that startups that engage customers to a high degree are more likely to innovate. On the same note, market orientation was found to have a strong correlation of 0.75 with overall innovation, which indicates that the startups that took into account the market needs would have a higher capacity of innovation. The regression analysis passed to prove that entrepreneurial marketing is a powerful predictor of the outcomes of innovation, it was shown that customer engagement and market orientation are the most important factors behind technological and product innovation. In addition, moderation analysis indicated that the relationship between marketing and innovation capabilities were moderated by government support and external networks with external networks moderating the relationship with = -0.45. The study also has brought about the importance of frugal innovation and lean marketing

practices used by startups to defeat resource constraints and uncertainty in the market, and partnerships with external stakeholders such as universities, incubators, and industry partners were a key aspect in scaling up the innovation ecosystem. The paper notes that sustainable development, dominance in the market, and eventual success in the market require the combination of entrepreneurial marketing and innovation practices. The suggested framework provides pragmatic suggestions to startups operating in new economies to improve their performance. To sum up, the study offers meaningful conclusions regarding the role of entrepreneurial marketing practices in the high-tech startups regarding innovation in the emerging economies. Future studies need to address the effects of digital instruments on marketing and innovation, the role of entrepreneurial orientation in the innovation process and longitudinal studies to determine how the combination of marketing and innovation affects as time lapses. Further, the researchers ought to conduct further research to determine the influence of cultural and institutional variables on the marketing-innovation relationship in start-up companies in various emerging economies.

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