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Empirical Insights of Sustainable Business Practices among Startups Using R

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Abstract: *This research is positioned at the intersection of sustainability, startup dynamics and tourism providing a comprehensive examination that contributes both academically and practically. This research strives to enhance knowledge and inform policies that support sustainable growth within the dynamic terrain of tourism sector by prioritizing sustainability, explaining the unique role of startups, and emphasizing the relevance of studying tourism-based startups. The proposed study uses R language to identify the key sustainable practices adopted by startups that have potential to enhance the business model. The findings highlight that startups that focus on adopting sustainable practices while creating transparency and awareness about sustainable practices are able to acquire and retain a competitive edge in the business landscape. This work underlines the need for the entrepreneurs and policy makers for inclusion of sustainable practices among ventures to achieve the sustainable development goals in near future.*

Keywords: *r language, sustainable business practices, startups, sustainable computing, tourism sector*

INTRODUCTION

The global world for sustainable development has sparked a paradigm shift across all the industries in which sustainability has emerged as a critical component of responsible business practices. Sustainability is a triple bottom line concept that includes environment, society and economic components which have progressed from a niche issue to a widespread necessity across the globe that guides organizational strategies. The complex impact of locals, ecosystem and cultural heritage has played a vital role in the discourse of sustainability.

Startups which are characterized by agility and creativity have been playing a critical role in developing viable business models. However, startups navigate the environment of sustainability is becoming increasingly evident as worries about climate change and responsible tourism have grown. Startups which are well positioned in the industry to lead dramatic movements towards sustainable practices have potential of innovation and creativity. The adaptability that startup resonates allows them to incorporate fresh techniques and adapt sustainability in ways that contradict the standard business rules. The startups operations have adopted sustainability and depicted how these businesses contribute to society and adhere to environmental rules. The tourism sector stands out among the greater tapestry of startups as a domain where the quest to achieve sustainable development goals is vital yet challenging. Tourism operations present distinct challenges of environmental pollution, overcrowding and destruction of natural places necessitating a need for thorough assessment of startups that function in the field of tourism. Uttarakhand which is known for with its abundant natural and cultural resources provides an enticing backdrop to investigate how tourism businesses comply with sustainability principles.

I. LITERATURE REVIEW

The origin of the term sustainability can be traced back to 140 years from the idea of spaceship earth.[1] The construct gained significant popularity with years and was defined as the, “development that meets the needs of

present generations without compromising with the future generation's needs." [2]. Driven by sustainability triple bottom line is a framework for measuring business performance and organizational success in three dimensions i.e. economic, social, and environmental. [3]. TBL is the extension of environment agenda which incorporates social and economic constructs as well. Literature reveals inconsistent usage of the term sustainability. As per previous studies the primarily focus of sustainability has been environmental sustainability. [4]. Other studies focused on the social and economic line of sustainability[5]. However, the TBL framework provides an equal balance to all the constructs and take into consideration planet, people and society[6]. The organizations that incorporate TBL in their business model are more likely to sustain in long run. [7]The study proposes a tool to bridge design-implementation gap by setting small scale pilots of sustainable business models. The paper explores challenges hardware faces in achieving agility and product quality. [8] The paper addresses design implementation gap in sustainable business model innovation that address the challenge of various business models that fail to reach the market. The study investigates the use of prototyping to bridge the gap between the design and execution of sustainable business concepts. Prototyping can help organisations test and iterate on business model concepts early on, lowering the risk of failure and increasing the possibilities of success. The study proposes a tool to plan and carry out small-scale pilots of sustainable business strategies. The tool is divided into four stages of ideation: This stage entails brainstorming and developing business model concepts to address sustainability issues. Prototyping: where a physical or digital prototype of the business model idea is created. Testing, where the prototype is tested with potential customers and users and learning which entails analysing the test findings. The study is conducted among nine startups and one multinational company. Future work is encouraged to explore the execution of the pilots through longitudinal studies.[9]

Considering Triple Bottom Line approach the sustainable startups are based on environmental aspects of business activities while delivering socially viable products/services to society along with remaining economically sound. The sustainable business model suggests that for a startup to be successful has to deliver value in three dimensions that is economic value, social value and environmental value. [10]The environment dimension covers the drivers that support sustainable business practices such as sustainable innovation, sustainable procurement and sustainable delivery. [11]The factors like resource usage, waste generation and reduction, recycling and overall preservation of biodiversity is inclusive of the environmental parameter. The social dimension covers the value created and delivered to the society at large[12]. The economic dimension covers the value capture aspect at large of the startup that is equally important for sustenance. According to previous studies key factors include focus on innovation have a clear sense of purpose. These ventures have a commitment towards the environmental and social sustainability [13]. A wide range of sustainability issues includes energy efficiency, waste reduction and management, carbon footprint and stakeholder engagement also are integral from environmental aspect. [14]. On the social front in order to achieve sustainability the startups may also need to engage in various partnerships and industrial collaborations to facilitate the growth. Startups can benefit from partnerships with established firms as these relationships can provide access to resources and expertise.[15] Further the partnerships with other startups and with non-profit organizations can help to drive innovation and facilitate the development of sustainable business models [16]. According to previous studies[17] the major factors that contribute to the social viability of a startup are product fit, market fit, the team, funding, customer acquisition and innovation[18]. Unique value proposition offered by startup is a key factor to determine the social viability of startup. Innovation can set a startup apart from competitors and offer a competitive advantage to startups[19]. Sustainable startups are often disruptive and innovative in their approach to solving problems [20].

II. DATA ANALYSIS AND RESULTS

This study aims to explore to investigate sustainable business practices followed by startups in tourism sector of Uttarakhand. Empirical data was collected from 152 startups based in the state. The data was collected on a five-point Likert scale. R package was used to conduct the analysis. The data collected from startups belongs to various sectors like experiential travel, hospitality, entertainment and bookings. The data set depicts diverse and inclusivity as it includes startups operated by both male and female founders. The main aim of the study is to investigate if startups based in the tourism sector of Uttarakhand are following any kind of sustainable practices. This objective aims to identify such sustainable practices included in the business model of startups. The table below depicts the

frequency of differentiation of all variables along with mean values. Further the image depicts mean comparison chart of sustainable business practices variables with red intervals depicting values do not overlap each other as shown in figure 1 and 2.

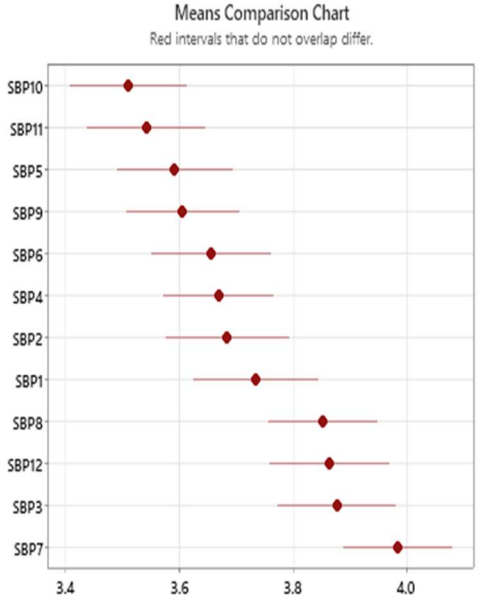

Figure 1: Mean Comparison Chart for SBP1 to SBP 12

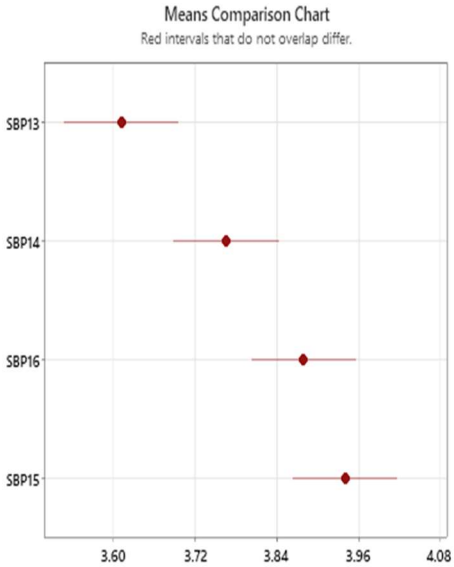

Figure 2: Mean Comparison Chart for SBP13 to SBP 16

The table below gives a detailed description of the practices adopted by startups in Uttarakhand.

TABLE 1: Detailed description of SBPs adopted by startups

Variable	Mean*	Frequency Diff.	Standard deviation	Kurtosis	Skewness
SBP7	3.9819	8	0.863	1.804	-1.065
SBP15	3.9389	6	0.881	1.199	-0.875
SBP16	3.8781	6	0.883	1.061	-0.825
SBP3	3.8758	6	0.946	1.074	-0.971
SBP12	3.8623	4	0.946	0.908	-0.877
SBP8	3.851	4	0.871	0.74	-0.693
SBP14	3.7652	3	0.888	0.349	-0.53
SBP1	3.7336	2	0.993	1.206	-1.03
SBP2	3.684	1	0.976	0.556	-0.766
SBP4	3.6682	2	0.887	0.359	-0.625
SBP6	3.6546	2	0.95	0.058	-0.496
SBP13	3.6117	2	0.971	-0.202	-0.436
SBP9	3.605	4	0.901	0.662	-0.66
SBP5	3.5914	4	0.927	0.045	-0.465
SBP11	3.5418	4	0.938	-0.119	-0.352
SBP10	3.5102	5	0.925	0.381	-0.528

At 0.05 significance level Dinno, A., & Dinno, M. A. (2017). Package 'dunn. test'. CRAN Repos, 10, 1-7.*

The above table shows the mean values of sustainable practices adopted by startups. The descriptive statistics depicts that the data falls within the limits of normality. The results depict that sustainable practices SBP 7 is most widely accepted practice which deals with acquisition and retention of new employees. Further the awareness and transparency about the practices add value towards the financial progress of startups. The sustainable business

practices adopted in the tourism sector of Uttarakhand are depicted in figure 3.

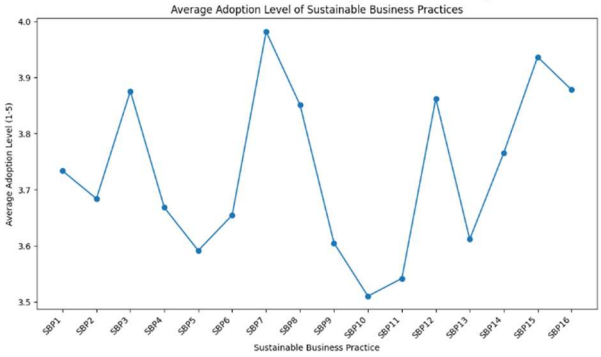

Figure 3: Average adoption level of sustainable business practices on Likert scale (1 to 5)

The proposed study highlights the sustainable business practices adopted by startups. Among all the sixteen practices the most adopted startup practices are interpreted in this section. The following interpretations have been drawn. SBP 7 which measures customer acquisition and retention has the highest mean value of 3.98 depicts that startups focus on bringing in new customers and retaining them. This reflects that majority of the startups focused on acquiring new customers. This could be done through strong value proposition and marketing. This variable belongs to the economic parameter of sustainability as it deals with not only customer acquisition but also retention. SBP 15 measures the level of transparency about sustainable practices in the society about this variable with a mean value of 3.93. It depicts that startups are transparent about sustainable business practices which help them build brand value. It also help in building trust with stakeholders and attract investors in tourism sector of Uttarakhand. SBP 16 highlights the importance of startup's offering to have an economic as well as social benefit for society. This variable denotes that a business in the entrepreneurial ecosystem startups discovery should bring solution for society problems at large which are not an economical but also scalable in future. The services offered by startups yields economic and social benefits to the community at large denoted by SBP16. SBP 3 measures the startup's focus on green product and services where they focus on designing and developing products and/or services for the market that are environmentally friendly. With a mean value of 3.8 it can be stated that startups are focusing on delivery of organic products and services. They are ensuring an eco-friendly and organic touch in their value offerings. Further, the financial plans and policies allocates money for environmental purposes relating to the startup sales activity. The tourism-based startups also focus on green processes that includes green services, green product design and green manufacturing process denoted by SBP 10 and SBP 2 respectively. In one or the other way startups are focusing on inclusion of sustainability in their business model. Based on the findings it can be concluded that startups that are evolving as innovative business solutions are not bringing solutions rather sustainable solutions to the society.

III. CONCLUSION

To conclude the financial plans and policies allocates money for environmental purposes relating to the startup sales activity. The tourism-based startups also focus on green processes that includes green services, green product design and green manufacturing process denoted by SBP 10 and SBP 2 respectively. In one or the other way startups are focusing on inclusion of sustainability in their business model. Based on the findings it can be concluded that startups that are evolving as innovative business solutions are not bringing solutions rather sustainable solutions to the society. The future work can focus on evaluating the success rate of each practice adopted by startups. The current study can be undertaken in different geographic locations and can be based on longitudinal study that will further contribute towards the achievement of sustainable development goals.

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