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## A Study of Zillennials in Uttarakhand Using RStudio

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Dinesh Rawat and Kalpana Rawat\*

*Management Department, Laxman Singh Mahar Government Post Graduate  
College, Pithoragarh, Uttarakhand, India*

*E-mail: dineshrawat2788@gmail.com; Kalpanarawat7@gmail.com*

*\*Corresponding Author*

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### **Abstract**

The purpose of this study is to understand the behaviour of Zillennials. The study has used constructs like personal innovativeness, technological innovativeness, gadget lovers, and technological opinion leadership for gaining insight into the overall behaviour of Zillennials. The study involve quantitative research where descriptive research design is used. This study makes use of both primary and secondary data. Survey research method has been used in this study where primary data is collected through a questionnaire. The questionnaire consists of 16 items where each of these items is evaluated on a five-point Likert scale ranging from 1 (Strongly Disagree) to 5 (Strongly Agree). The data is collected from a sample of 300 students from various colleges of Pithoragarh belonging to the category of Zillennials. Purposive sampling technique is used to collect the data. The study uses descriptive measures of central tendency, cronbach alpha, and confirmatory factor analysis technique. The data is analysed in RStudio with the help of readxl, psych, lavaan, and summarytools packages. The results of this study reveal that Zillennials in Uttarakhand have personal innovativeness and technological opinion leadership. They are also gadget lovers. However, the

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study made an interesting finding that the Zillennials do not have technological innovativeness. This finding is in contrary to previous findings which suggested that individuals who willingly take challenges are more likely to adopt and use new products. The findings of this study will add academic value in the context of expanding knowledge on Zillennials' behaviour. The data collected for this study is from students studying in Pithoragarh district of Uttarakhand thus it might not be appropriate to generalize the findings for entire state.

**Keywords:** Gadget lover, personal innovativeness, RStudio, technological innovativeness, technological opinion leadership, Uttarakhand, Zillennials.

## 1 Introduction

Zillennials are young adults born in 1995 or later and also known as Generation Z (Ossinger, 2020; Bassiouni and Hackley, 2014; Fister-Gale, 2015). Generation Z is the first generation born into a digital world. They account for 37% of population in Asia-Pacific and set to rise to 41% by 2040 (Ossinger, 2020). Zillennials prefer personalized experiences and believe that anything is possible (Merriman, 2015). Generation Z show interest in new technologies, always desire to feel safe, emphasize on ease of use, and possess a desire to temporarily escape the life realities (Wood, 2013). Zillennials focus more on the experience, have higher expectations, and no brand loyalty (Schlossberg, 2016). Zillennials always prefer to purchase products online due to ease, convenience, efficiency, and lower prices (Merriman and Valerio, 2016). Zillennials prefer to buy products of their favourite brands online (Bernstein, 2015). Zillennials are called travellers of the future as they would be the highest contributor towards youth tourism which is estimated to reach \$400bn by 2020 (Monaco, 2018; Cavagnaro et al., 2018). Zillennials are expected to overtake Millennials in income by 2031. They would be the target customers for companies in coming years. Thus, it is necessary for companies to understand the behaviour of Zillennials in every aspect. It is also important to study Zillennials behaviour since they behave differently to earlier generations which can lead to changes in consumer behaviour. This study tries to understand the behaviour of zillennials in Uttarakhand. Since Zillennials welcome new technology and use it as their primary source of communication (Van den Bergh and Behrer, 2016; Wood, 2013) thus we have used constructs like personal innovativeness, technological innovativeness, gadget lover, and technological opinion leadership for analysing

their behaviour. This paper consists of six sections. Section 1 is the introduction. Section 2 consists of literature review of constructs like personal innovativeness, technological innovativeness, gadget lovers, and technological opinion leadership. Sections 3 and 4 are related to objectives and research methodology used in the study. In Section 5, the results are discussed. The last section of the paper closes with conclusions, implications, limitations and future scope of research.

## **2 Literature Review**

Zillennials welcome new technology and are the first true digital natives. Zillennials are more comfortable with mobile devices, the internet, and social media. Zillennials prefer to interact virtually with friends more than millennials and gen X. Farrag (2017) studies youth (16 to 25 years of age) towards luxury brands and intention to purchase and indicated that social comparison, brand consciousness and fashion involvement have a significant impact of their intention to purchase luxury brands. Rahmayanti et al., (2021) studied usage intention of Zillennial in Indonesia and found positive impact of subjective norm, perceived value, and trust on usage intention. This study has used four constructs for studying the behaviour of zillennials. The constructs are explained below.

**Personal Innovativeness:** Midgley and Dowling (1978) states innovativeness as a function of dimensions of human personality which is possessed by all individuals in higher or lesser degree. Agarwal and Prasad (1998) defined personal innovativeness as the risk-taking behaviour of certain individuals which is not found in others. People with personal innovativeness behaviour are willing to take high risk, try new things and handle high level of uncertainty easily (Bruner et al., 2005). Personal innovativeness has played an important part in innovation diffusion research and is considered as a key variable since it helps in segmenting consumers into innovators and non-innovators. (Rogers, 1995; Flynn and Goldsmith, 1993).

**Technological Innovativeness:** Technological Innovativeness is the extent to which the consumer is motivated to be an early user of a new technology (Bruner and Kumar, 2007). Technological innovativeness measures innovativeness within a specific domain of interest (Flynn and Goldsmith, 1993; Goldsmith and Hofacker, 1991). Domain specific innovativeness is taken to be an important construct as it predicts the innovative behaviour of the consumer more accurately within a specific domain of interest (Leavitt and Walton, 1975; Roehrich, 2004).

**Technological Opinion Leadership:** Rogers and Cartano (1962) defined opinion leaders as individuals who have a high influencing power over the decision of others. Childers (1986) defined opinion leaders as individuals who can influence the decisions of others by offering information to them during their consumption decisions. However, Rogers (2003) states that technological opinion leadership is a more domain specific construct related to an individual's leadership in the domain of technology. Technological opinion leaders are more innovative and less dogmatic and have affinity towards technology making them experts in this field (Myers and Robertson, 1972; Geissler and Edison, 2005). Technological opinion leaders are defined as consumers who offers information to other consumers and thereby influence their consumption decisions while buying technological products (Bruner and Kumar, 2007).

**Gadget lovers:** Bruner and Kumar (2007) defined gadget lovers as consumers with high intrinsic motivation to adopt and use new technological products. Through a focus group study, they identified that gadget lovers are those individuals who enjoy playing with gadgets, they spend a considerable amount of time in gaining knowledge about gadgets. Therefore, the key characteristic of gadget lovers is that they have high intrinsic motivation and are more knowledgeable about new technological products. Bruner and Kumar (2007) defined Gadget lovers as those adopters who influences the opinions of others and at the same time are relatively early adopters of innovations.

### **3 Research Objectives of the Study**

Companies have been obsessively talking about the millennials from past few years but now they have to shift their market towards zillennials. Zillennials are the future Millennials and they are going to contribute up to 40 percent of all consumers. Thus, it is important to study and understand their behaviour.

The ultimate objective of this paper is to study the behaviour of zillennials. This broad objective is answered through the following specific research objectives.

- To examine the degree of personal innovativeness among zillennials
- To study the extent of technological innovativeness among zillennials
- To identify the level of technological opinion leadership among zillennials
- To examine the extent to which zillennials are gadget lovers

#### **4 Research Methodology**

The study involve quantitative research where descriptive research design is used. This study makes use of both primary and secondary data. Survey research method has been used in this study where primary data is collected through a questionnaire. The questionnaire is designed after detailed literature review and careful selection of items for measuring the constructs i.e personal innovativeness, technological innovativeness, gadget lover, and technological opinion leadership. The questionnaire consists of 16 items covering all the constructs based on the literature. Each of these items is evaluated on a five-point likert scale ranging from 1 (Strongly Disagree) to 5 (Strongly Agree). The data is collected from a sample of 300 college students belonging to the category of zillennials. Purposive sampling technique is used to collect the data. The study uses descriptive statistic, cronbach alpha, confirmatory factor analysis techniques. The data is analysed in RStudio with the help of readxl, psych, lavaan, and summarytools packages.

Reliability analysis: The reliability of the items can be assessed by coefficient alpha (Cronbach, 1951). Cronbach’s alpha should be above 0.70 (Nunnally, 1978). Table 1 shows the Cronbach’s alpha values of all constructs. The Cronbach’s alpha values are calculated through psych package in RStudio. In the study, all alpha coefficients are above 0.7 which indicate good reliability.

Validity analysis: In this study, the developed questionnaire had content validity since the selection of measurement items were based on an exhaustive review of literature and it was also checked by pre-testing of the questionnaire by professionals and academicians. Apart from content validity, construct validity is also very important to determine.

Construct validity involves the assessment of the degree to which an operationalization correctly measures its targeted variables (O’Leary-Kelly

**Table 1** Cronbach alpha values for all constructs

Constructs	Cronbach Alpha Value
Overall Questionnaire	0.87
Personal Innovativeness	0.78
Technological Innovativeness	0.87
Gadget Lover	0.87
Technological Opinion Leadership	0.77

and Vokurka, 1998). According to O’Leary-Kelly and Vokurka (1998) establishing construct validity involves the empirical assessment of convergent and discriminant validity.

The convergent validity of a construct is established when the following three conditions are met i.e

- CR (Composite Reliability) > 0.7,
- AVE (Average Variance Extracted) > 0.5 and
- CR > AVE (Hair et al., 2010).

Discriminant validity is ensured if a measure does not correlate very highly with other measures from which it is supposed to differ (O’Leary-Kelly and Vokurka, 1998). A common approach to assess discriminant validity is the Fornell-Larcker criterion (Fornell and Larcker, 1981), which compares the AVE (shared variance within) of the constructs to the squared correlation between the constructs (shared variance between). The discriminant validity of a construct is established when the following two conditions are met i.e.

- MSV (Maximum Shared Variance) < AVE (Average Variance Explained) and
- ASV (Average Shared Variance) < AVE (Average Variance Explained).

In this study confirmatory factor analysis (CFA) is used to ensure the construct validity of the questionnaire. According to Ahire, Golhar and Waller (1996), confirmatory factor analysis (CFA) provides enhanced control for assessing uni-dimensionality as compared to exploratory factor analysis (EFA) and is more in line with the overall process of construct validation. In this study lavaan package is used for confirmatory factor analysis in RStudio. Tables 2 and 3 provide summary of validity analysis.

It is clear from Tables 2 and 3 that the conditions of convergent and discriminant validity are satisfied. Thus, we can confirm the validity of the questionnaire.

**Table 2** Convergent validity results

Construct	CR	AVE
PI – Personal Innovativeness	0.795	0.505
TI – Technological Innovativeness	0.872	0.630
GL – Gadget Lover	0.881	0.601
TOL – Technological Opinion Leadership	0.771	0.531

**Table 3** Discriminant validity results

	PI	TI	GL	TOL
PI	0.710 (Square root of AVE)			
TI	0.328	0.793 (Square root of AVE)		
GL	0.431	0.514	0.775 (Square root of AVE)	
TOL	0.388	0.144	0.387	0.728 (Square root of AVE)

**Table 4** Result of responses on personal innovativeness among zillennials

Item	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
I like new ideas and experiences.	67 (22.33%)	136 (45.33%)	57 (19%)	27 (9%)	13 (4.33%)
New ways of doing things excites me.	115 (38.33%)	98 (32.67%)	56 (18.67%)	20 (6.67%)	11 (3.67%)
Unpredictable life interests me.	113 (37.67%)	73 (24.33%)	76 (25.33%)	19 (6.33%)	19 (6.33%)
Buying locally available products interests me.	81 (27%)	134 (44.67%)	61 (20.33%)	21 (7%)	3 (1%)

## 5 Findings

### Objective 1: To examine personal innovativeness among zillennials

To measure personal innovativeness of zillennials, four questions were asked. Table 4 shows the results of these four questions. The data was analysed in RStudio with the help of summarytools package. Following results were found out after data analysis.

Most of the students agreed that they like new ideas and experiences. Majority of them agreed to the fact that they get excited by new ways of doing things. More than 60% are very much interested in buying locally available products and in unpredictable life. The study concluded that zillennials in Uttarakhand are very much personally innovative.

### Objective 2: To examine technological innovativeness among zillennials

To measure technological innovativeness of zillennials, four questions were asked. Table 5 shows the results of these four questions. The data was

**Table 5** Result of responses on technological innovativeness among zillennials

Item	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
Being first to buy new technological products is cool.	32 (10.67%)	113 (37.67%)	89 (29.67%)	26 (8.67%)	40 (13.33%)
Buying new technological products before others excites me.	36 (12%)	75 (25%)	67 (22.33%)	81 (27%)	41 (13.67%)
Being first to buy new technological products is important to me.	34 (11.33%)	95 (31.67%)	90 (30%)	47 (15.67%)	34 (11.33%)
I like buying new technological products.	43 (14.33%)	112 (37.33%)	64 (21.33%)	51 (17%)	30 (10%)

**Table 6** Result of responses on gadget lover questions

Item	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
I like learning to operate gadgets, despite of them being old or new	129 (43%)	29 (9.67%)	44 (14.67%)	53 (17.67%)	45 (15%)
Exploring how new gadgets will work excites me.	93 (31%)	55 (18.33%)	94 (31.33%)	40 (13.33%)	18 (6%)
When alone, I like playing with gadgets	120 (40%)	28 (9.33%)	46 (15.33%)	66 (22%)	40 (13.33%)
Despite of gadgets being old or new, I enjoy playing them.	99 (33%)	82 (27.33%)	69 (23%)	36 (12%)	14 (4.67%)
I am thrilled to play with gadgets.	100 (33.33%)	70 (23.33%)	66 (22%)	54 (18%)	10 (3.33%)

analysed in RStudio with the help of summarytools package. The analysis showed that less than 50% of students agreed to the fact that being first to buy technological products is cool to them. Only 37% of students said that they get excited by buying new technological products before others. Only around 50% of the students indicated that they like buying new technological products and less than 50% suggested that it is important for them to be the first to buy technological products. This implies that zillennials in Uttarakhand do not have technological innovativeness.

### **Objective 3: To examine the extent to which zillennials are gadget lovers**

To measure the extent to which zillennials are gadget lovers, five questions were asked. Table 6 shows the results of these five questions. The data was

**Table 7** Result of responses on technological opinion leadership questions

Item	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
I often influence people's opinions about gadgets.	126 (42%)	91 (30.33%)	47 (15.67%)	29 (9.67%)	7 (2.33%)
I often persuade other people to buy the gadgets I like	117 (39%)	102 (34%)	45 (15%)	30 (10%)	6 (2%)
Friends and family take my suggestions while buying new gadgets.	123 (41%)	91 (30.33%)	44 (14.67%)	36 (12%)	6 (2%)

analysed in RStudio with the help of summarytools package. The study suggests that more than 50% of students agreed that they like learning to operate gadgets, despite of them being old or new. Majority of students get thrilled when they play with high-tech gadgets and around 50% get excited on knowing the working of new gadgets. The analysis shows that around 50% like playing with gadgets when alone and more than 60% like playing with gadget despite of them being old or new. Thus, the study concluded that zillennials in Uttarakhand are gadget lovers.

**Objective 4: To analyse technological opinion leadership among zillennials**

To measure the extent of technological opinion leadership among zillennials, three questions were asked. Table 7 shows the results of these three questions. The data was analysed in RStudio with the help of summarytools package. The study shows that majority (more than 70%) of students believe that they often influence people's opinions about gadgets, persuade other people to buy the gadgets which they like and agreed to the fact that friends and family take their suggestions while buying new gadgets. Thus, the study concludes that zillennials in Uttarakhand have technological opinion leadership.

**6 Conclusion**

The study tries to measure the degree of personal innovativeness behaviour, technological innovativeness, technological opinion leadership, and extent to which zillennials are garget lovers. The study uses descriptive research design. Survey research method is used in this study where primary data is collected through a questionnaire. The study uses descriptive statistics, cronbach alpha, confirmatory factor analysis techniques. The data is analysed

in RStudio with the help of readxl, psych, lavaan, and summarytools packages. The results of this study reveal that zillennials in Uttarakhand have personal innovativeness and technological opinion leadership. They are also gadget lovers. These findings support previous literature which suggest that personal innovativeness encourage people to take chances and to try new gadgets (Thakur et al., 2015) and there is a significant correlation between product involvement and opinion leadership (Bartels and Reinders, 2011; Shoham and Ruvio, 2008; Goldsmith and Hofacker, 1991). However, the study made an interesting finding that the zillennials do not have technological innovativeness. This finding is in contrary to previous findings which suggested that individuals who are willing to take challenges are more likely to adopt and use new products (Leonard-Barton and Deschamps, 1988) and an individual's inclination towards risk taking and trying out new things should lead to his/her desire for innovativeness toward technological goods (Thakur et al., 2015). These findings will contribute to the existing literature on zillennials. and will add academic value in the context of expanding knowledge on zillennials' behaviour. The data collected for this study is from students studying in Pithoragarh district of Uttarakhand thus it might not be appropriate to generalize the findings for entire state. Future research can benefit from a bigger pool of participants so as to gain a clearer picture. The findings of this study will inspire other researchers to investigate more on the behaviour of zillennials. We hope that policy makers make use of the findings of this study and make policies for the benefit of zillennials.

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### **Biographies**



**Dinesh Rawat**, Assistant Professor, Management Department, Laxman Singh Mahar Government Post Graduate College, Pithoragarh, Uttarakhand, India, Email id – [dineshrawat2788@gmail.com](mailto:dineshrawat2788@gmail.com)



**Kalpana Rawat**, Assistant Professor, Management Department, Laxman Singh Mahar Government Post Graduate College, Pithoragarh, Uttarakhand, India, Email id – [Kalpanarawat7@gmail.com](mailto:Kalpanarawat7@gmail.com)

