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The relationship between individual innovativeness and belonging to different generations

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Abstract

This article, applying the cohort perspective, which views generations simply as collections of people born in a given period of time, analyses the relationship between individual innovativeness and belonging to different generations. The article provides the generation conception, gives a short overview of generational diversity, focuses on generational differences, discusses theoretical aspects of individual innovativeness and analyses individual innovativeness among the representatives of four generations: the Baby Boomers, the Generation X, the Generation Y and the Generation Z.

Keywords: Generation, the Baby Boomers, the generation X, the generation Y, the generation Z, individual innovativeness.

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1. Introduction

Organisations, seeking to remain competitive in the 21st century, have to pay particular attention to the generational diversity management. There are four different generations in the labour market: the Baby Boom Generation, the Generation X, the Generation Y and the Generation Z. Fundamental generational differences in the workplace are work values and attitudes [8], [12], [25], [42], [54], [76], (Jones, 2016), work–life balance (Lionas, Duxbury, Higgins, 2005; Barber, 2014), personality differences [25], [41], [69], leadership [23], [25], [65], [85], communications (Harber, 2011), [31], career experiences [13], [25], [47], [75], work motivators and preferences [25], [29], [72], [81] and learning styles [19], [31], (Jones, 2016). The generational theory further posits that certain generational locations will become actualised or 'dominant', whereas others will remain non-actualised and will express as 'recessive', adopting similar attitudes to an adjacent dominant generation, despite differing formative experiences [48], [49], [71]. Because the difference in the ageing process includes biophysical, psychological and social ageing due to different life circumstances [58], these factors of different groups might influence people's responses to innovativeness [32]. In order to make the best use of generational differences, it is important to find out whether there is a difference in individual innovation between generations because individuals who possess individual innovativeness can be freer, more responsible in moral terms and more mature when they look for more autonomy [1], [34].

Although scientists agree that innovation is a critical factor in creating and maintaining organisational competitiveness, the major parts of research works analysing individual innovativeness are devoted to determining the individual inactiveness level of the representatives of separate professions or groups and analysing the innovative behaviour of the representatives of different generations; however, there is an absolute lack of research works, which would cover the analysis of all the currently existing different generations in the labour market through the prism of individual innovativeness.

The main purpose of this study is to analyse and compare the individual innovativeness in different generations.

Research questions: What is the relationship between different generations and individual innovation?

This article, applying the cohort perspective, which views generations simply as collections of people born in a given period of time, analyses individual innovativeness of generational diversity: individual innovativeness among the representatives of four generations (the Baby Boomers, the Generation X, the Generation Y and the Generation Z) and tries look into the differences between belonging to different generations and individual innovativeness.

The following research data collection methods have been applied: scientific literature analysis and a written questionnaire survey. The analysis of variance (ANOVA) for collected data was carried out.

2. Rethinking on generational diversity in the context of individual innovativeness

A generation can be defined as a group of individuals born within the same historical and sociocultural context, who experience the same formative experiences and develop unifying commonalities as a result [49]. Generations are characterised by groups of people within a specific time span [38], [45]. The generations include individuals who were born over the same period and share social and historical events [27]. Although the term generation is most accurately used to describe genealogical kinship, it has been adopted into common use to describe broader social trends [37], [60], [64].

The research and theory of generations in the social sciences have proceeded from two distinct perspectives: (1) the social forces perspective, which views generations as interrelated and

multidimensional social groups that take shape within the flow of history, and (2) the cohort perspective, which views generations simply as collections of people born in a given time period [24], [43]. The social forces perspective stems from the work of sociologist Karl Mannheim, who argued that the events and context a generation experiences in its formative years serve as a potential basis for the emergence of a shared 'inborn way of experiencing life and the world' [50, p. 283]. A new generational consciousness emerges when some historical, social or economic shift occurs that necessitates new skills, new patterns of social organisation and alterations in values and lifestyles [18], [43]. The cohort perspective, emerging from the work of Ryder [64], is prevalent in fields such as demography, gerontology and psychology [60]. A generation is a cohort characterised by common cultural, economic, social, technological and historical transformations [27], [53]. This cohort perspective approach seeks to bring empirical precision to the ambiguous construct of generation, so it is important to determine the relationship between individual innovativeness and belonging to different generations.

Current research suggests the four generational cohorts in the workplace are generally described as the Traditionalists / the Silent Generation, the Baby Boomers, the Generation X and the Generation Y [16], [61]. Today's workforce consists of individuals from four generations: the Silent Generation (the Traditionalists; born between 1925 and 1945), the Baby Boomers (Boomers; born between 1946 and 1964), the Generation X (GenX; born between 1965 and 1981) and the Generation Y (GenMe, also known as GenY, Millennials, nGen and iGen; born between 1982 and 1999) [76]. The Silent Generation has practically abandoned the labour market, so it is relevant to consider only the Baby Boom Generation, the Generation X, the Generation Y and the Generation Z. The three generations (the Baby Boomers, the Generation X and the Generation Y) thus would attach different values to work, private life, leisure, family life, social life, political commitment, gender equality, etc. [28], [27], [75]. The new Generation Z can be named differently – digital generation, children of virtual environment, digital natives, etc. The representatives of this generation, as assumed by McCrindle, Wolfinger [52] and other researchers, are typically born after the year 1995; this generation is associated to the occurrence of the Internet and its expansion.

To date, academic research on generational differences in work-related variables has been descriptive rather than explanatory and has not proceeded from an explicit theoretical framework [37]. Despite a recent explosion of research concerning generational differences in the workplace, scholars and practitioners are presently faced with a confusing disarray of evidence generated in a variety of contexts, with different methodological and theoretical perspectives on the nature of generations [48]. Researchers have found many generational differences in personality traits, attitudes, mental health and behaviours [39], [74]. Overall, the Generation X and especially the Generation Y are more individualistic and self-focused [65], [66], [77]. Millennials are characterised as technologically savvy, globally concerned, comfortable with diversity, highly innovative and willing to try anything [51], [59], [61].

Arsenault [6] emphasises the generational diversity in the labour market as well as multifaceted creativity and innovation as an opportunity for organisations to remain competitive. Skiba and Barton [67] highlighted the millennials' multitasking ability and propensity for innovation fuelled by curiosity, discovery and exploration as contributing factors of the millennial generation's active learning style [19]. The differences observed between generations can also be attributed to career stages [75], life cycles [47] or age [27], [83]. The Generation Y are individuals born between the years 1982 and 1999. This generation has grown up within the technology era, using a variety of social networking sites as a main source of communication, which is different from the previous generation's face-to-face way of socialising [15], [76]. Currently, scholars analyse the characteristics of the Generation Z, which is inseparable from the latest technologies, and suggest that a more detailed analysis allows defining the following tendencies: an increase in hyperactivity, infantilism, social autism, consumerism, multimedia literacy, 'loop' reading, lack of communication as well as lack of analytical and critical evaluation of a text and its meaningful rendering [9], [10], [21], [35].

The majority of scholars agree that there are differences between the generations in work values, attitudes and preferences. Looking from the cohort perspective, which views that the generations are different, and taking into consideration the innovation diffusion theory [62], [63], which views that individuals react differently to a new idea, practice or object due to their differences in individual innovativeness [84], we can assume that there are differences between belonging to different generations and individual innovativeness.

3. The theoretical aspects of individual innovativeness

Individual innovativeness is inseparable from the concept of innovation. Innovation is about creating the enabling environment to generate an ongoing stream of ideas. If individuals have the capacity, the support and the power to think in a novel way, then they will continue to explore. The minor personal initiatives can lead to major initiatives involving other members of organisation [56].

Innovativeness is 'a function of dimensions of human personality' [55, p. 235]. Thakur et al. [73] argue that literature describes individual innovativeness as global or general innate innovativeness, a more abstract level than realised or actualised innovativeness [3], [20], [55], and individual innovativeness is seen as a key variable in the innovation adoption process and it is possessed by all individuals to a greater or lesser degree.

Individual innovativeness is defined as developing, adopting or implementing an innovation [86]. Literature demonstrates the direct positive relationship between personal values and individual innovativeness [30], [73]. Individual innovativeness is defined as a risk-taking propensity that is determined in certain individuals and these individuals are willing to take chances and to try new things and are able to cope with high levels of uncertainty [44]. Rogers [63] distinguished five categories of individual innovativeness: innovators (who like risk and innovation); early adopters (who are easily influenced by leaders and bring innovation to the public); early majority (who consciously avoid risk and like security); late majority (who change something in their life with difficulties and take innovation unwillingly); and laggards (who do not change anything or even resist changes) [36], [68]. The importance of innovation for organisational success has been increasingly noted in the scientific literature of the organisational sciences [2], [5], [80]. Baas et al. [7] conducted a meta-analysis on mood and creativity. The findings of Yi et al. [84] study clearly demonstrate the powerful role individual innovativeness plays in determining user perceptions of innovation characteristics. Other studies focused on innovation characteristics [78], system characteristics [17], culture [70] and descriptive personal traits, such as educational backgrounds [4] and gender [22], [79]. Many studies showed that gender [11], [14] does not have an impact on individual innovativeness [34].

Summing up, we can assume that the major parts of research works analysing individual innovativeness are devoted to determining the individual innovativeness of the representatives of separate professions or groups and analysing the innovative behaviour of the representatives of different generations; however, there is an absolute lack of research works, which would cover the analysis of all the currently existing different generations in the labour market through the prism of individual innovativeness.

4. Methodology

Instruments. The first part of the questionnaire included demographic information of the participants; the second part included the 'Individual Innovativeness Scale' developed by Hurt et al. [33]. The items constituting the Individual Innovativeness Scale of the measurement tool were 5-point Likert-type items. The data obtained from the research were analysed by the statistical software Statistical Package for the Social Sciences 22.0. The research was carried out during January–July 2017 in Lithuania, EU.

Sample: The research included 356 representatives of different generations living in Lithuania, EU.

Demographic Characteristics of the Sample. The research included 356 questionnaires which were subjected to analysis: 72.75% of the sample (*n* = 259) was female and the other 26.40% (*n* = 94) was male; 0.85% did not specify their gender (*n* = 3). Making use of Little's Missing Completely at Random Test, the missing values were filled in by applying the most common selection.

According to their education, the respondents were distributed as follows: 2.24% of the respondents had primary education (*n* = 8); 5.34% basic education (*n* = 19); 23.60% secondary education (*n* = 84); 2.53% spec. secondary education (*n* = 9); 3.09% further education (*n* = 11); 5.90% higher college education (*n* = 21); 56.46% higher university education (*n* = 201); and 0.84% of respondents did not specify their education (*n* = 3).

According to their employment and the occupied position, the respondents were distributed as follows: 6.18% of the respondents indicated that they are company owners (*n* = 22); 1.97% top-level managers (*n* = 7); 9.83% mid-level managers (*n* = 35); 39.89% specialists / public servants (*n* = 142); 3.37% workers (*n* = 12); 4.21% indicated that they are currently unemployed (*n* = 15); 21.91% students (*n* = 78); 8.71% school students (*n* = 31); and 3.93% indicated the variant 'Other' (*n* = 14).

According to the date of birth, respondents were categorised into four different generations: 9.55% as the Baby Boomers (*n* = 34), 35.96% the Generation X (*n* = 128), 28.09% the Generation Y (*n* = 100) and 26.40% the Generation Z (*n* = 94). All authors are required to complete the Procedia Exclusive License Transfer Agreement before the article can be published, which they can do online. This transfer agreement enables Elsevier to protect the copyrighted material for the authors, but does not relinquish the authors' proprietary rights. The copyright transfer covers the exclusive rights to reproduce and distribute the article, including reprints, photographic reproductions, microfilm or any other reproductions of similar nature and translations. Authors are responsible for obtaining from the copyright holder the permission to reproduce any figures for which copyright exists.

5. Empirical analysis

Distribution of the sample according to the individual innovativeness scores: 8.43% (*n* = 30) were innovators, 33.71% (*n* = 120) were early adopters, 45.22% (*n* = 161) were early majority adopters, 8.15% (*n* = 29) were late majority adopters and 4.49% (*n* = 16) were laggards (Table 1). Average individual innovativeness score in this research are as follows: X = 65.62 for Baby Boomers, X = 67.10 for the Generation X, X = 67.31 for the Generation Y and X = 65.76 for the Generation Z. This shows that the Baby Boomers and the Generation Z, likewise the Generation X and the Generation Y, in this respect are more similar. This coincides with the viewpoint of some scholars that the representatives of different generations are not only different, but it is possible to perceive similarities.

Table 1. Individual innovativeness of participants

Categories of individual Innovativeness	Individual innovativeness classification and scores	Frequency *N*	% of Total sum
Innovators	>80	30	8.43
Early adopters	69–80	120	33.71
Early majority adopters	57–68	161	45.22
Late majority adopters	46–56	29	8.15
Laggards	<46	16	4.49
Total		**356**	**100.0%**

Composed by the authors according to the data obtained during the research.

The findings showed that there were more innovators among the Generation X (10.94%) and the Generation Z (9.57%) than among the Baby Boomers (5.88%) and the Generation Y (5%). Innovators are those who are willing to take a risk of trying out new ideas ahead of other members of the system [57], [63]. Innovators are the first to test new products and processes [63], [82]. The Generation X and the Generation Z innovators like trying new ideas and taking risk; the Baby Boomers and the

Generation Y innovators are very social with other innovators. They easily understand the benefits of innovation and initiate them.

According to Rogers [63], early adopters usually comprise about 13.5% of the population. They are not only open to changes but also help the public to accept these changes [46]. The innovators and early adopters are innovation leaders in all areas [40], [57]. In this research, there are more early adopters among the Generation Y (37%) than among the Generation Z (30.85%); respectively, the Baby Boomers comprise 35.29% and the Generation X 32.81%. Although early adopters are less likely to takes risks than innovators, they are leaders in social systems using the latest technology or innovation in activities.

The early majority usually comprise about 13.5% of the population [63]. They are seeking for security, they avoid changes and are unwilling to take risks until there is absolute clarity [68]. In this research, the early majority are mostly found among the Generation Y (48%) and the smallest among the Baby Boomers (35.29%). The early majority requires time to think about solutions, to see how innovation works and to adapt to innovation.

The late majorities [according to Rogers [63], 34% of the population] are those sceptical about or resistant to innovations [46], [68] and such individuals adopt a new idea when it becomes a well-known standard [26]. In this research, the late majority adopters are mostly found among the Baby Boomers (17.65%) and the smallest among the Generation X (4.69%). The late majority are very suspicious and cautious about innovation, hardly adapting to innovation, accepting innovation only when they are convinced that they are in line with their interests.

The laggards, who, according to Rogers [63], comprise 16% of the population, have a very traditional, even sceptical, attitude towards innovation; they tend to disapprove or even resist innovation if it is not necessary [26], [46], [68]. In this research, the laggards are mostly found among the Baby Boomers (5.88%) and the smallest among the Generation Y (3%). Laggards are opposed to innovation, rejecting it, and are sceptical about innovation.

According to Rogers [63] and Moore and McKenna [57], the innovators' category represents a very small portion of the population (2.5%) and innovators and early adopters have much in common; they share a strong willingness to try out new technologies [57], [84]. In contrast to Rogers' normal distribution of categories of individual innovativeness, the distribution in this research had different ratios for adopter categories. The first difference between the two distributions was the ratio for late majority. According to Rogers [63], 34% of the individuals were the late majority, whereas 17.65% of the Baby Boomers, 4.69% of the Generation X, 7% of the Generation Y and 10.64% of the Generation Z were defined as the late majority among the participants of this research. The second difference between the two distributions was the ratio for the early majority adopters. According to Rogers [63], 34% of the individuals were the early majority, whereas 35.29% of the Baby Boomers, 46.09% of the Generation X, 48% of the Generation Y and 44.68% of the Generation Z were defined as the early majority among the participants of this research. The findings revealed that the great majority of the participants were early majority, who, according to Lundblad [46] and Yi et al. [84], tend to introduce innovation to the public, waiting for their reactions to the changes and innovation. A similar data distribution and difference from Rogers' normal distribution of categories was received by Yuksel [87], where he researched individual innovativeness profiles of pre-service teachers in Turkey.

Table 2. Individual innovativeness of participants among different generations according to gender, education, employment and the position occupied at work (ANOVA).

Source	Type III Sum of squares	df	Mean square	*F*	Sig
The individual innovativeness among different generations according to gender					
Corrected model	8.285[a]	9	0.921	1.043	0.405
Intercept	769.507	1	769.507	871.725	0.000
Individual_innovativeness	1.511	4	0.378	0.428	0.789

Gender	0.130	1	0.130	0.147	0.702
Individual_innovativeness * gender	5.756	4	1.439	1.630	0.166
Error	302.780	343	0.883		
Total	3,054.000	353			
Corrected total	311.065	352			
a. R squared = 0.027 (Adjusted R squared = 0.001)					
The individual innovativeness among different generations according to education					
Corrected model	106.027[a]	28	3.787	5.942	0.000
Intercept	485.279	1	485.279	761.551	0.000
Individual_innovativeness	2.120	4	0.530	0.832	0.506
Education	52.234	6	8.706	13.662	0.000
Individual_innovativeness * education	6.337	18	0.352	0.552	0.931
Error	206.461	324	0.637		
Total	3,061.000	353			
Corrected total	312.487	352			
a. R squared = 0.339 (Adjusted R squared = 0.282)					
The individual innovativeness among different generations according to employment and the position occupied at work					
Corrected model	121.695[a]	40	3.042	4.968	0.000
Intercept	733.680	1	733.680	1,197.937	0.000
Individual_innovativeness	1.588	4	0.397	0.648	0.629
Position	60.811	8	7.601	12.411	0.000
Individual_innovativeness * position	20.327	28	0.726	1.185	0.242
Error	192.923	315	0.612		
Total	3,090.000	356			
Corrected total	314.618	355			
a. R squared = 0.387 (Adjusted R squared = 0.309)					

Composed by the authors according to the data obtained during the research.

According to the ANOVA test results, we can draw the following conclusion: there is a difference in the means of categories of individual innovativeness and individual innovativeness classification and scores. The ANOVA test results indicated (Table 2) that there is no a significant difference between the individual innovativeness among different generations according to gender, between the individual innovativeness among different generations according to education, between the individual innovativeness among different generations according to employment and the position occupied at work.

6. Conclusion

In summary, we can assume that the essential differences are among the categories of individual innovativeness, rather than among the representatives of different generations, i.e., each generation contains a similar percentage of innovative people of different categories of individual innovativeness. The ANOVA test results indicated that there is no significant difference: between the individual innovativeness among different generations according to gender; between the individual innovativeness among different generations according to education; between the individual innovativeness among different generations according to employment and the position occupied at work. Having compared in detail the categories of individual innovativeness, it is obvious that the means inside different generations differ among all types of individual innovativeness.

In contrast to Rogers' normal distribution of categories, the distribution in this research had different ratios for the late majority and for the early majority adopters' categories. The findings

revealed that the great majority of the participants were the early majority. The findings showed that there were more innovators among the Generation X and the Generation Z than among the Baby Boomers and the Generation Y. The Generation X and Generation Z innovators are keen on trying new ideas and taking risks, the Baby Boomers and Generation Y innovators are very social with other innovators. There are more early adopters among the Generation Y than among the Generation Z. The early majority adopters are mostly found among the Generation Y and the smallest among the Baby Boomers. The late majority adopters are mostly found among the Baby Boomers and the smallest among the Generation X. Laggards are mostly found among the Baby Boomers and the smallest among the Generation Y. It is important that teams of different generations have innovators who are capable of generating innovations and early adopters who can deliver them to the public.

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