

DOI: <http://doi.org/10.4038/ucr.v3i2.71>

University of Colombo Review (Series III),
Vol. 3, No. 2, 2022



Development of self-reporting assessment tool to assess Personal Innovativeness

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ABSTRACT

In the context of innovation diffusion and marketing, personal innovativeness (PI) is considered crucial as it acts as a precondition for the individual's innovation adoption decision. In exploring recent research papers written by practitioners on the concept of PI, it was identified that most of these papers ended up measuring the level of PI either quantitatively or qualitatively. There, the author realizes that there is a lack of knowledge available to identify PI as a categorical variable (discrete) in qualitative studies. Therefore, to some extent, it occludes qualitative researchers from observing the attributes that different PI typologies are associated with. To fill this gap, the author develops the proposed self-reporting assessment tool (SAT) to assess PI by considering various other mechanisms used by previous academics to measure PI. This article is a concept paper that summarizes the state of knowledge in the field with preliminary work to develop SAT, and it lays the foundation for further research on PI. There, SAT will be useful for qualitative or quantitative researchers to understand the respondent's PI typology at the stage of gathering background information about the respondent.

KEYWORDS:

Personal innovativeness, Innovation diffusion theory, Adopter categories, self-reporting assessment tool, Innovativeness typologies

Suggested Citation: Rathnayake, N. D. N. B. (2022). Development of self-reporting assessment tool to assess Personal Innovativeness. *University of Colombo Review* (New Series III), 3(2), 41 - 51.

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Introduction

Personal innovativeness (PI) is often considered a trait; a pattern of fixed thoughts, feelings, or actions that are unique to the person, and determines their behaviour (Dobre, et al., 2009; Leavitt & Walton, 1975; Lu, et al., 2005; Midgley & Dowling, 1978; Park & Kim, 2010; Roehrich, 2004). PI is fostered by an individual's cultural conditions because PI is a trait (Allport, 1961; Church, 2000; Fleeson & Jayawickreme, 2015; Hofstede & McCrae, 2004; McCrae & Costa, 1997; McCrae & Costa, 1998; Rathnayake, 2021). In Rogers's innovation diffusion theory (IDT), innovativeness is defined as a variable for quantitative analysis (Rogers, 2003). However, being a trait, PI can express empirically via a qualitative study (Allport, 1937). Rogers's IDT is also in favor of this. He asserts that social scientists must obtain a holistic standpoint of the way of life, views about the world, and social relationships of the respondents (Rogers, 2003).

According to Rogers (2003), there are different levels of PI. These are generally referred to as adopter categories. These different adopter categories behave differently. Therefore, PI is not a variable that we can generally consider and measure as one. But so far, most studies have been conducted to measure the relationship between other variables and PI. There, PI has been often considered an independent, dependent, or moderating variable. However, considering PI as a categorical (discrete) variable for qualitative studies, it is necessary to understand the respondent's PI category before starting the original research. For example, if we are conducting research on women within a certain pay scale, the researcher has to find a group of women within that pay scale. Similarly, if a researcher wants to conduct an in-depth study of an adopter category, to select respondents, the researcher must use a simple assessment to find out which adopter category the respondent belongs to. Currently, there is a lack of such a quick assessing mechanism that guides the researcher to understand the PI level of their respondents/cases. Therefore, this is an attempt to develop an assessment that helps to assess a person's innovativeness.

Literature Review: Personal Innovativeness

PI is explained as an important construct in learning human behaviour and technological adoption (Agarwal & Prasad, 1998). Following are the main definitions of innovativeness put forward by Rogers, Midgley and Dowling:

“Innovativeness is the degree to which an individual makes innovation decisions independently of the communicated experience of others” (Midgley & Dowling, 1978, p.235).

“Innovativeness is the degree to which an individual or other unit of adoption is relatively earlier in adopting new ideas than the other members of a system” (Rogers, 1983, p.22).

As the authors explain in their definition, Midgley and Dowling (1978) argue innovativeness is one's capability to respond to new ideas, and make innovative decisions independently, based on their communicative experience with others. But the category of adoption they belong to depends on how quickly they make decisions independently

compared to others (Roger, 1983). Hence, we can conclude that PI is one of the aspects that use the time dimension in innovation diffusion (Roger, 1983). On that basis, there are five distinct typologies of innovativeness, namely, the innovator, the early adopter (EA), the early majority (EM), the late majority (LM), and the laggards (Rogers, 1983). Further, Rogers and Shoemaker (1971) have identified innovativeness as a continuous variable, confirming that it can be conceptually categorised into discrete categories as the way we do it for social status. Rogers (2003) explains innovativeness as a continuous variable, possibly because it depends on the time of adoption by the individual. But the author's view is that it can also be considered a categorical variable as it categorizes respondents into different adopter categories.

Anyhow, why do some people quickly adopt technology while others do not? (Agarwal & Prasad, 1998). This has received significant attention among the researchers in developing different theoretical models. As stated by Midgley and Dowling (1978), different researchers have discussed the period for innovation adoption in different terms. In the discussion of Goldsmith and Hofacker (1991), they define domain/product-category-specific innovativeness as the propensity for an individual to learn and follow an innovation in a particular area of interest (p.211). But they argued that innovativeness cannot be completely described in accordance with the time factor. Therefore, the author believes that Rogers' adopter categories provide better understanding of the typologies of an individual innovativeness decision, compared to the scale introduced by Goldsmith and Hofacker (1991). Because Goldsmith and Hofacker (1991) focus only on determining whether a person is innovative or not. But Rogers further explains innovativeness through a categorization based on the time a person takes to adopt innovation. Accordingly, time is of the essence in measuring customer innovativeness, as innovations/technology become obsolete over time. Nothing obsolete can be considered to be an innovation in the market. Moreover, Rogers (2003) clearly defines innovation as "an idea, practice, or object that is perceived as new by an individual" (p.37). There, the customer's perceived newness is explained based on how he reacts to such innovation. So, if the said idea/preparation appears new to the person, it is considered as an innovation for him (Rogers, 2003).

Again, Goldsmith and Foxall (2003) say that if consumers do not remember the time of adoption, it may hinder researchers in making clear decisions about respondents' innovativeness level. It may be true that the consumer does not have to remember when an innovative product came on the market. But innovativeness means how the individual is relatively ahead of other members of a system in adopting new ideas. Therefore, it is not necessary to know the exact date or time of adoption. Also, even if the customer does not remember it when he passes it on, he can never completely forget about the reactive innovativeness he had at the time of adoption. According to IDT, there is no way to ignore time, because diffusion is a process that takes place over time. As presented in IDT, the researcher can use strategies such as field investigations and longitudinal panel studies and utilize archived records, and multiple responder data to avoid the weaknesses of gathering time of adoption, as necessary. Also, if there is such a problem that the respondent cannot remember the exact time of adoption, the researcher can use the in-depth interview to gather

more data to conclude (Roger, 2003). Thus, Rogers (2003) indirectly states that PI can be measured qualitatively. Also, some research has obtained the data required to categorize the PI through interviews (Lowrey, 1991; Price, et al., 1986).

After a thorough background study, Midgley and Dowling (1978) recommended three ways to measure innovativeness:

1. In the context of a shop simulation experiment, individuals purchase or fail to purchase an innovative option;
2. A score of a self-designation measure of innovativeness; and
3. A score of a questionnaire outlined to measure past innovative purchasing behaviour of an entity (Midgley & Dowling, 1978, p. 231).

But they also say that the measurement of innovativeness also depends on communications, as people would not be innovative if they do not know the existence of the innovation.

Goldsmith and Foxall (2003) describe three methods of measuring innovativeness both qualitatively and quantitatively. They say innovativeness can be explained as a behavioural, global-personality-trait (GPT), or domain-specific innovativeness. Behavioural innovativeness is the process of explaining whether a person is following an innovation or not. This can be measured by looking at the acceptance or non-acquiring of a product, and the time of the adoption. GPT explains PI as a type of personality trait, and this can be measured through the self-report. The final category is domain-specific innovativeness, which explains the innovativeness of a particular product. But this review focuses on proposing a self-reporting measure for PI, through this proposed self-reporting measure anyone should be able to understand their own or another's PI category as a discrete, categorical variable.

Developing the Self-reporting Assessment Tool (SAT)

When measuring PIs, Rogers, and Shoemaker (1971) contend three principles in order to classify people into categories: all individuals in those categories must be included in the sample, no individual in one category must be in another category, and the classificatory principle must be less ambiguous. They define it in accordance with the classification principles put forward by Jahoda in 1951.

If we define those categories using the time of their adoption, according to the IDT, Innovators are eager to try new concepts and they might be in the opening set of people to adopt new products. EAs will also try new ideas, but they may not be the first to adopt as innovators. But they use it mostly earlier than other people in society. Innovators and EA have slightly different features to mark as two separate classifications in the theory but can also be combined into one category to achieve requirements in studies (Rogers, 2003; Mahajan & Muller, 1998). The early majority of people adopt the innovations before the average members of the systems. He is not the first to try new things but neither stays till last to adopt the items. However, the late majority of people adopt things after it becomes a necessity and after the average number of members used them. Similarly, laggards are

the last to embrace innovation. They have very lesser social networks and are isolated. Normally when they adopt the product, there may be innovations which supersede the product they adopted (Roger, 1971; Rogers, 2003) and most of the time laggards are older mature customers (Mattila et al., 2003).

It is specified above how people are relatively categorized according to the time it takes to consume a product. Also, Rogers and Shoemaker (1971) describe the qualities of people in those categories as below.

Table 1: Characteristics of Adopter Categories (Personal Innovativeness)

Adopter category	Characteristics
Innovators	Try new ideas. This interest will alienate them from their peers and motivate them for cosmopolitan social needs. Maintains good communication between other innovators Innovators have the ability to control their financial background, which helps them to absorb risks and to withstand the failure of innovation. They also need to have the technical knowledge to understand and use new things.
EA	They are opinion leaders. Others refer to EAs for guidance and info about the innovation.
EM	They are in between very early and late to adopt states of the diffusion process. They are no leaders, but they connect with people. They purposely take some time, before they entirely accept the new idea.
LM	They adopt innovation as they are socially pressured to do so.
Laggards	They are the last to adopt adoption. They are isolated They referred to previous generations and past experiences. Tied to traditions. When they adopt a product, it may have been replaced by a new product.

Source: Innovation Diffusion Theory of Rogers (2003)

In measuring the PI of the respondents, the following are some of the sample questions that different researchers used as the scales for their research.

Table 2: Sample Scales Used to Measure Innovativeness Levels of Respondents.

Construct	Sample questions used by other academics
PI in the domain of Information technology	“If I heard about a new information technology, I would look for ways to experiment with-it.”, “Among my peers I am usually the first to try out new information technologies.”, “In general, I am hesitant to try new information technology.”, “I like to experiment with new information technology” (Agarwal & Prasad, 1998, p. 210; Xu, H., & Gupta, S., 2009)
Innovative adopter	“You buy into a new product’s concepts very early in its life cycle” (Park & Kim, 2010, p. 292). “I am venturesome and eager to be the first to try new innovations” (Savery, 2005, p. 58-63).
EA	“I adopt innovations and influence others to do so”, “My opinion about innovations is respected by peers” (Savery, 2005, p. 58-63).
EM	“You know that many new-fangled inventions end up as passing fads, so you are content to wait and see how other people are making out before you buy in yourself”, “You want to see well-established references before investing substantially” (Park & Kim, 2010, p. 292). “I am willing to follow the lead of others in adopting innovations” (Savery, 2005, p. 58-63).
LM	“You do not buy unless comfortable with your ability to use the technology”, “As a result, you wait until something has become an established standard, and even then, you want to see lots of support” (Park & Kim, 2010, p. 292). “I need to be convinced of the advantage of innovations by peers”, “I go along with innovations out of necessity” (Savery, 2005, p. 58-63).
Laggards	“You are very cautious about new technology”, “You will only purchase when you feel it has become a necessity” (Park & Kim, 2010, p. 292). “I am suspicious of innovations”, “I am resistant to changes” (Savery, 2005, p. 58-63).

Source: Compiled by the author

Looking at the first construct shown in Table 2, those sample questions are used to find out whether the individual is generally innovative or not. But by doing so, one cannot come to a clear judgment as to what level of innovativeness a person has. Also, when looking at the questions in the other constructs shown in Table 2, it is observable that academics have used differently designed questions in measuring respondent's adopter categories. There, following the responses given by the respondent, the investigator must do an analysis of the data to understand the PI level of the person.

However, as discussed above, suppose a researcher wants to do a study to understand how laggards chooses a particular service. For that, the researcher must find some laggards as respondents. For this, since there is currently no simple mechanism for selecting respondents, it is necessary to do another separate qualitative or quantitative research before the actual research and analyse the data and select the appropriate respondents. This would be a dawdle.

Usually, using a simple question, we can know the person's income level and classify them accordingly. Similarly, this assessment is designed to determine which innovative category a person is more oriented towards, by asking a simple question. However, the author is of the opinion that we cannot expect any scale to classify a person by drawing a hard line between innovativeness typologies. Though innovativeness is a trait, patterned feeling or habit, it is all about human behaviour. So, person's behaviour can be affected by various social and personal reasons around him. Therefore, this mechanism only helps the researcher to understand which innovativeness typology a person is more oriented to.

The author has identified very small differences between innovativeness typologies while developing the questionnaire below. There, the author has tried to bring out those small differences in the questions. Example 1: Innovators and early adopters have similar characteristics and therefore they can be grouped as one (Rogers, 2003; Mahajan & Muller, 1998). EAs act as 'opinion leaders' to introduce innovations to others and whereas innovators do not. But innovators are keen to try any innovation quickly by absorbing risk, they are often faster than EAs. Therefore, in the question of identifying the innovator, the author used the innovator's desire to experiment with the innovation as a specific characteristic. In understanding EAs, it depends on whether they act as 'opinion leaders'. Example 2: Mahajan & Muller (1998) states that the EM and LM also can be treated as one because they are more similar. However, the author finds that taking time to try out innovations is an observable characteristic of EM, but they do not wait till the last moment. LMs also take time to try innovation, but the author identifies that they need encouragement from others.

So, this assessment is designed by capturing the key characteristics of the said 'adopter categories' that Rogers specified in his IDT. It also focuses on other interview questions used by previous academics to measure innovativeness. Below is the proposed assessment.

Interviewer:

I will read a few statements for you; listen carefully and please let me know which statement is best for you.

- i. *“Once the new digital banking technology was released to the Sri Lankan market, did you eagerly try it immediately, by absorbing the risk? or*
- ii. *“You have tried a digital banking technology that was newly released to the market, and influenced others to try it” or*
- iii. *“You were neither the first nor the last to try out the new digital banking technologies in the market” or*
- iv. *“You were hesitating to use the new digital banking technology until your peers pressured you for using it.” or*
- v. *“You were the last to use an innovation, you have not used new digital banking technology unless it became absolutely necessary”*

The above statements are designed to reduce a person's tendency to agree with another statement when they agree with one statement. This is purely aligned with the rules of categorization presented by Rogers and Shoemaker (1971). All individuals in the categories are included in the sample, no individual in one category must be in another category, and the classificatory principle is also less ambiguous.

These questions have been developed using the self-designating, self-reporting mechanism suggested by Goldsmith and Foxall (2003), and Midgley and Dowling (1978) so that an individual can understand their own category of innovativeness. As recommended by them, this assessment also helps to categorize a person according to his orientation of PI typology based on his/her previous innovative behaviour towards a particular product or service. The researcher can change the question and use it according to the domain he/she wants to assess. For example, the domain in these questions is digital banking technology. These sets of statements are designed to understand the experience the respondents have had with digital banking.

In the above assessment, the researcher can easily understand the time frame in which a person pursues an innovation. As we discussed in previously, as soon as the product entered the market, the first consumer to use it was officially identified as an innovator. The EAs are not as quick to consume the product as the innovators, but they are willing to use the product before other consumers. Nonetheless, the early majority people do not take the risk to adopt the new product quickly. They observe the market and start using the product. Late majority people need persuasion from others to decide about consuming a new product and they need a lot of support from their peers. The last to adopt the innovation are laggards. Laggards are more resistant to adopting a new product unless they are very cautious about using the same. In other words, they do not use it unless the product becomes a general necessity.

Consequently, if a person chooses the answer that suits him the best as (i), that person will most likely be identified as an innovator. If a person's answer is (ii) he most likely be an EA; if answer is (iii) as an EM, answer (iv) as LM, and if (v) as a laggard.

Because this is a self-reporting mechanism, in practice there may be respondents who find it difficult to understand their own small character differences, so may not be able to select the best suited statement for him/her. In such cases, a researcher can eliminate such respondents from the sample. Furthermore, as previous researchers have confirmed that

there are similarities but small differences between innovators and EA, EM and LM; the researcher can combine those innovative typologies as required for their research.

Conclusion

This is a preliminary assessment developed by the author to understand the orientation of a person's innovativeness typology as a categorical variable (discrete) that can be used for any qualitative or quantitative study. However, the author realizes the possibility of validating this concept through concurrent validation in future studies. Since this is a self-reporting tool, no further data analysis is required to understand the adopter category the customer belongs to. It saves the researcher's time and will ultimately increase the amount of research on this ground, as it clearly defines the respondent's orientation; who the innovator is, the EA, the early and late majority, and the laggard. I (the author) invite researchers to use the proposed assessment for their studies on adopter categories.

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