

# RELATIVE ADVANTAGE AND COMPATIBILITY AS FACTORS PREDICTING ADOPTION OF INNOVATION AMONG GENERATION X TEACHERS

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## Abstract

Low adoption of innovation is a challenge in educational management. The significance of forecasting adoption of innovation, using relative advantage and compatibility as predictors was verified. Predictive research design was used. The data from 106 Generation X teachers, selected through stratified proportional random sampling, were analyzed using multiple linear regression analysis. Results showed the model's moderate strength (35%) in predicting adoption of innovation is significant, supporting the Diffusion of Innovation Theory. Future research may explore additional variables to account for the remaining 65% of the criterion's variance. Qualitative research may identify themes that could serve as potential variables.

Keywords: Relative advantage, compatibility, factors predicting adoption of innovation, generation x teachers

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## 1. Introduction

Low adoption of innovation among Generation X teachers in higher education institutions (HEIs) remains a significant concern within the rapidly evolving academic landscape. Although digital tools and instructional innovations are increasingly integrated into higher education, many teachers encounter persistent challenges in fully embracing and utilizing these advancements in their professional practice. Existing research indicated that innovation acceptance is primarily influenced by perceived relative advantage and compatibility, which shape individuals' evaluations of the usefulness and alignment of new technologies with established work practices and professional experiences (Scherer et al., 2021; Menzli et al., 2022).

International research demonstrated that challenges in innovation adoption among Generation X are prevalent across various contexts. In Oman, Al Mukahini and Dahleez (2023) highlighted that organizational innovation in the Omani higher education sector is influenced by employees' behaviours and attitudes toward adopting new ideas and workplace practices. In Singapore, theoretical and empirical work on digital transformation in higher education suggested that user readiness and institutional factors influence engagement with innovation and the adoption of digital tools in academic settings (Benavides et al., 2020). In the United States, research on digital transformation and organizational behaviour suggests that employees may exhibit varying levels of adaptability and resistance to change, depending on individual and contextual factors in influencing innovation adoption (Dwivedi et al., 2021). Collectively, these studies indicate that the challenges experienced by Generation X encompass not only technological innovations but also broader organizational changes across multiple countries.

In the Philippine context, low adoption of innovation among professionals in higher education institutions remains a concern amid ongoing digital transformation in academic organizations. Many faculty members still show varying levels of readiness to adapt to organizational innovations, especially those that require changes to established practices and routines (Toquero, 2020). In Davao City and other Philippine higher education institutions, challenges in adopting digital tools and integrating new teaching approaches have also been observed among faculty members, reflecting broader issues in technology readiness and institutional adaptation in academic practice (Baticulon et al., 2021).

The continued low adoption of innovation among Generation X teachers in higher education institutions (HEIs) may negatively affect institutional efficiency and the implementation of academic reforms. When innovations are not fully embraced, HEIs may experience delays in instructional improvement, reduced effectiveness in technology integration, and limited enhancement of teaching practices. This highlights the need to examine the factors in influencing innovation adoption. Exploring relative advantage and compatibility may provide insights into how Generation X teachers evaluate and respond to innovations in the academic setting. However, limited empirical evidence exists on these factors in relation to Generation X teachers in HEIs, which this study aims to address.

While studies on innovation adoption often focus on Millennials and Generation Z as digital natives, limited research has explored the perceptions of Generation X teachers. This creates a gap in understanding how factors such as relative advantage and compatibility influence their willingness to adopt innovations. Addressing this gap is vital to ensuring inclusive, socially responsive strategies that support organizational transformation.

### *1.1. Significance of the Study*

This study is significant because it examines the factors in influencing the adoption of innovation among Generation X teachers in HEIs, particularly their perceptions of relative advantage and compatibility in workplace innovation. At the global level, it supports Sustainable Development Goal 8, which promotes decent work, inclusive economic growth, and lifelong learning by encouraging participation of all generations in innovation and organizational development. At the institutional level, it aligns with the mission of higher education institutions to develop adaptive, future-ready educators who can respond effectively to technological and organizational change. The findings may benefit Generation X teachers by providing insights into their experiences and encouraging greater engagement in innovation. It may also assist Social Studies educators in discussing generational differences and workplace transformation, while serving as a reference for future researchers studying innovation adoption across different contexts.

### *1.2. Statement of the Problem*

This study determined the significance of forecasting Adoption of Innovation, using Relative Advantage and Compatibility as predictors. Specifically, the following objectives were pursued:

1. to determine the levels of relative advantage in terms of accuracy improvement, task efficiency and performance enhancement; compatibility in terms of value fit, work practice fit, skill alignment; and adoption of innovation in terms of intention to use, commitment to use and continuity of use among Generation X employees;

2. to determine the significance of the correlation between relative advantage, and compatibility, and the adoption of innovation among generation x teachers; and

3. to determine the significance of the strength of the model for adoption of innovation using relative advantage and compatibility as predictors.

### 1.3. Hypotheses

The null hypothesis will be tested at a 0.05 level of significance:

H<sub>01</sub>: Relative advantage and compatibility do not significantly correlate with adoption of innovation.

H<sub>02</sub>: The strength of the model to predict adoption of innovation using relative advantage and compatibility, is not significant.

### 1.4. Theoretical Framework

This study was grounded in Everett Rogers Diffusion of Innovations Theory (1962; 2003), which explains that the adoption of innovation is influenced by individuals' evaluation of different innovation attributes, namely relative advantage, compatibility, complexity, trialability, and observability, that affect their decision to adopt and continuously use an innovation.

In this study, relative advantage is indicated by improvements in accuracy, task efficiency, and overall performance. On the other hand, compatibility is indicated by alignment with personal values, existing work practices, and current skills. Lastly, adoption of innovation is indicated by intention to use, sustained commitment, and continued utilization. Hence, this study is delimited to the elements of relative advantage, compatibility, and adoption of innovation in the theory, while other attributes, such as complexity, trialability, and observability, were excluded.

### 1.5. Conceptual Framework

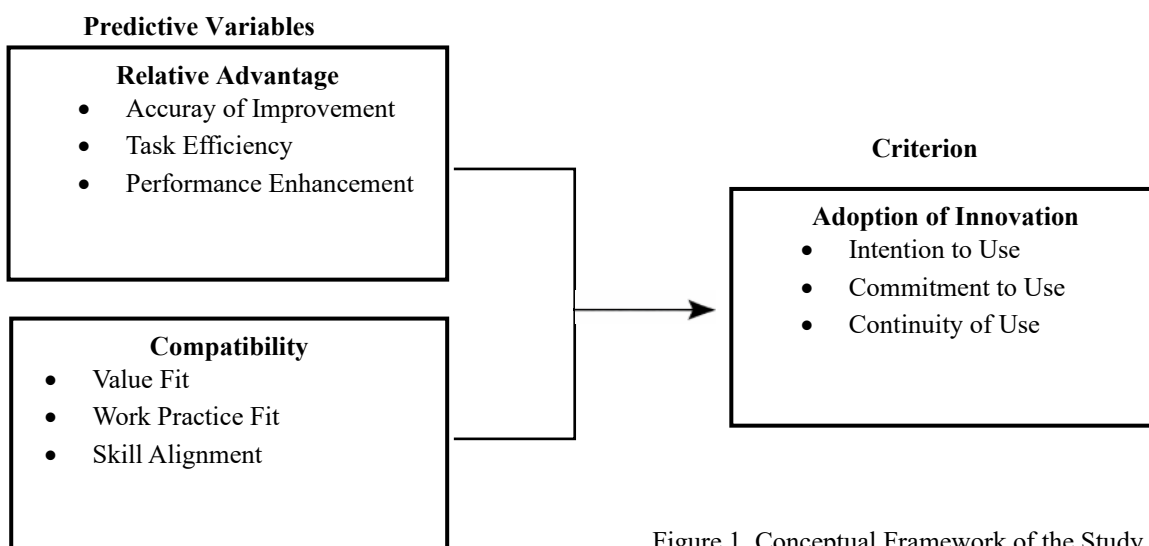


Figure 1. Conceptual Framework of the Study

## 2. Methodology

### 2.1. Research Design

This research employed predictive research design. According to Leavy (2022), predictive research examines relationships among variables to determine their capacity to forecast outcomes based on observed patterns. This design was appropriate for the study, as it assessed the relationship between relative advantage, compatibility, and innovation adoption among Generation X teachers in higher education institutions (HEIs). In addition, it evaluated how these variables contribute to the likelihood of adopting innovations in educational settings. Through this approach, the study sought to generate insights that support the development of more effective strategies for technology adoption among teachers.

### 2.2. Locale of the Study

This study was conducted in three higher educational institutions in Davao City. These institutions were selected for their active engagement in academic instruction and for the increasing integration of technological innovations in teaching and learning. The setting provides a relevant context for examining how Generation X teachers perceive and adopt innovation, as they are continuously exposed to evolving educational technologies and practices. This environment supports the investigation of how relative advantage and compatibility predict innovation adoption within actual educational settings.

### 2.3. Sample and Sampling

This study included 106 of 144 Generation X teachers from three private HEIs. The respondents met the following criteria: (a) currently employed teachers in a higher education institution for the school year 2025-2026, and (b) belonging to Generation X (born between 1965 and 1980). The sample size was determined using Slovin's Formula to ensure adequate representation of the population, consistent with sampling guidelines discussed by Johnson and Christensen (2024). Moreover, the study applied stratified proportional random sampling, in which the population was organized into subgroups and respondents were randomly selected in proportion to ensure balanced representation across groups (Taherdoost, 2022).

### 2.4. Data Gathering Technique

A survey technique was used in gathering the data. Survey research is a method of collecting data from respondents through structured questionnaires to gather information about their perceptions, attitudes, and behaviors. It is commonly applied in studies that aim to describe characteristics or examine relationships among variables. This method is advantageous because it is cost-efficient, allows data collection from a large number of respondents, and provides standardized responses that are easy to analyze (Joshi et al., 2020).

The variables in this study were measured using three adapted questionnaires: Relative Advantage, Compatibility, and Adoption of Innovation. The Relative Advantage Questionnaire, adapted from Moore and Benbasat (1991), measured relative advantage in terms of improved accuracy, increased task efficiency, and enhanced performance. The Compatibility Questionnaire, adapted from Venkatesh et al. (2003), measured compatibility through value t, work practice t, and skill alignment. The Adoption of Innovation Questionnaire, adapted from Beckett (2007) and Bhatt (2021), measured innovation adoption based on intention to use, commitment to use, and continuity of use. All instruments were modified to align with the study's objectives and used a 4-point Likert scale ranging from 'never' to 'always'. The final research instrument contained 44

items: 15 for relative advantage, 14 for compatibility, and 15 for adoption of innovation. The instruments underwent reliability testing, yielding Cronbach's alpha coefficients of 0.941 for relative advantage, 0.928 for compatibility, and 0.765 for adoption of innovation, indicating that the instruments were reliable for the study.

### *2.5. Data Analysis Technique*

Descriptive data analysis was used to summarize and present the data collected from the respondents. This method involves organizing and interpreting numerical data using measures such as the mean to describe patterns and overall responses. It is commonly used in quantitative research to provide a clear understanding of each variable's level without concluding the data. Descriptive analysis is advantageous because it simplifies complex data sets, making them easier to interpret and present in a meaningful way (Pallant, 2020).

Correlation analysis was also utilized to determine the relationship between the independent variables, relative advantage and compatibility, and the dependent variable, adoption of innovation. This statistical technique measures the strength and direction of the association between variables using Pearson's correlation coefficient. It is appropriate when the goal is to identify whether changes in one variable are associated with changes in another, without implying causation (Pallant, 2020).

Lastly, multiple linear regression analysis was employed to examine the combined effect of relative advantage and compatibility on the adoption of innovation. This method allows the researcher to determine how each independent variable contributes to the dependent variable while controlling other factors. It is commonly used in studies that aim to predict outcomes and assess the significance of multiple predictors in explaining variations in a dependent variable (Field, 2024).

### *2.6. Ethical Considerations*

The study adhered to ethical standards by ensuring confidentiality, voluntary participation, and full respect for respondents' rights. No personal identifiers were collected, and all data were used solely for academic purposes, securely stored, and properly disposed of after the study was completed. The research complied with the Society for Moral Integrity and Legal Ethics (SMILE) guidelines, ensuring integrity, fairness, and accountability throughout the research process. It was also guided by the Belmont Report (1979), which emphasized respect for persons, beneficence, and justice. The respondents' rights were respected, and they were protected from any harm during the study. Should they choose to withdraw from participation at any stage of the data gathering process, their rights were respected.

## **3. Results**

### *3.1. Descriptive Results*

Table 1 presents the descriptive statistical results of the study. It includes the variables, relative advantage, compatibility, and adoption of innovation, along with their respective indicators. It also shows the number of respondents, computed means, standard deviations, and their corresponding descriptive interpretations.

**Table 1: Descriptive Statistics (n=106)**

| Variables                     | Standard Deviation | Mean        | Descriptive Level |
|-------------------------------|--------------------|-------------|-------------------|
| <b>Relative Advantage</b>     | <b>0.25</b>        | <b>3.59</b> | <b>Very High</b>  |
| Accuracy Improvement          | 0.27               | 3.56        | Very High         |
| Task Efficiency               | 0.28               | 3.57        | Very High         |
| Performance Enhancement       | 0.31               | 3.54        | Very High         |
| <b>Compatibility</b>          | <b>0.28</b>        | <b>3.58</b> | <b>Very High</b>  |
| Value Fit                     | 0.34               | 3.53        | Very High         |
| Work Practice Fit             | 0.32               | 3.52        | Very High         |
| Skill Alignment               | 0.32               | 3.42        | Very High         |
| <b>Adoption to Innovation</b> | <b>0.23</b>        | <b>3.70</b> | <b>Very High</b>  |
| Intention to Use              | 0.29               | 3.69        | Very High         |
| Commitment to Use             | 0.25               | 3.73        | Very High         |
| Continuity of Use             | 0.27               | 3.72        | Very High         |

1.00-1.75 Very Low, 1.76-2.50 Low, 2.51-3.25 High, 3.26-4.00 Very High

Specifically, the table shows that the relative advantage variable had a mean score of 3.59, indicating a very high descriptive level. This suggests that respondents perceive the relative advantage as very strong. All its indicators are rated very high. The standard deviation indicates highly consistent responses. On the other hand, the compatibility variable had a mean score of 3.58, which is also very high. This suggests that respondents perceive the compatibility as very strong. All indicators are rated very high, with highly consistent responses. Finally, the adoption of innovation variable had a mean score of 3.70, interpreted as very high. This indicates a strong willingness among respondents to adopt and use the innovation continuously. All indicators are rated very high, and responses are highly consistent.

Among the variables, adoption of innovation is interpreted as the strongest, as it obtained the highest mean score and all its indicators are consistently rated at a very high level. This reflects a highly advanced level of acceptance and sustained use of innovation. In comparison, relative advantage and compatibility are also interpreted at a very high level, indicating strong perceptions; however, these are slightly lower than the level of adoption of innovation.

### 3.2. Correlation Results

Table 2 presents the correlation analysis. It contains the predictive and criterion variables. It also contains the r-value, p-value, decision on the null hypothesis, and its corresponding interpretation.

**Table 2: Correlation Table (n=106)**

| Variables | Adoption to Innovation |         |                   |                |
|-----------|------------------------|---------|-------------------|----------------|
|           | r-value                | p-value | Decision on $H_0$ | Interpretation |

|                           |      |       |          |                                          |
|---------------------------|------|-------|----------|------------------------------------------|
| <b>Relative Advantage</b> | 0.53 | 0.001 | Rejected | Moderately High Positive,<br>Significant |
| <b>Compatibility</b>      | 0.34 | 0.001 | Rejected | Moderately Low Positive,<br>Significant  |

Level of Significance: 0.05

Decision Rule: Reject  $H_0$  if  $p < 0.05$

The table specifically shows that the correlation between relative advantage and adoption of innovation variables obtained a p-value of 0.001, which is less than the 0.05 level of significance; hence, the null hypothesis was rejected. It indicates that the correlation between relative advantage and the adoption of innovation variables is significant. The corresponding r-value of 0.53 indicates a moderately high positive correlation. This implies that a higher perceived relative advantage of innovation is associated with greater adoption among Generation X teachers.

Likewise, the table shows that the correlation between compatibility and adoption of innovation variables obtained a p-value of 0.001, which is less than the 0.05 level of significance; hence, the null hypothesis was rejected. It indicates that the correlation between compatibility and the adoption of innovation variables is significant. The corresponding r-value of 0.34 indicates a moderately low positive correlation. This implies that when innovations are perceived as consistent with teachers' existing practices, values, and skills, there is a corresponding increase in their adoption.

Both relative advantage and compatibility were found to be significantly related to the adoption of innovation among Generation X teachers, indicating that increases in these variables are associated with higher levels of adoption of innovation. When compared, relative advantage showed a stronger relationship with the adoption of innovation than compatibility, although both demonstrated positive and significant associations.

### 3.3. Regression Table (n=106)

Table 3 is a regression table. It includes the predictors and the criterion variable. Likewise, it contains the standardized and unstandardized beta coefficients, the p-value, the decision on the null hypothesis and its corresponding interpretation, and the model summary.

| <b>Adoption to Innovation</b> |                       |                   |                     |          |             |
|-------------------------------|-----------------------|-------------------|---------------------|----------|-------------|
| <b>Variables</b>              | <b>Unstandardized</b> |                   | <b>Standardized</b> |          |             |
|                               | <b>Coefficients</b>   |                   | <b>Coefficients</b> |          |             |
|                               | <b>B</b>              | <b>Std. Error</b> | <b>Beta</b>         | <b>t</b> | <b>Sig.</b> |

|                                                                                                                                                                                                    |      |      |      |      |       | Decision on<br>$H_0$ | Interpretation |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|------|------|------|-------|----------------------|----------------|
| (Constant)                                                                                                                                                                                         | 1.27 | 0.32 | —    | 3.86 | <.001 | —                    | —              |
| <b>Relative Advantage</b>                                                                                                                                                                          | 0.45 | 0.07 | 0.49 | 6.15 | 0.001 | Rejected             | Significant    |
| <b>Compatibility</b>                                                                                                                                                                               | 0.21 | 0.06 | 0.26 | 3.29 | 0.001 | Rejected             | Significant    |
| R = 0.59      R <sup>2</sup> = 0.35      F = 28.20      p = 0.001<br>Level of Significance: 0.05<br>Decision Rule: Reject $H_0$ if $p < 0.05$<br>Predictive Model: $AOI = 0.45 RA + 0.21 C + 1.27$ |      |      |      |      |       |                      |                |

The table specifically shows that the model predicting adoption of innovation is  $AOI = 0.45 RA + 0.21 C + 1.27$ . The corresponding  $R^2$  value of 0.35 indicates that the strength of the model is moderate in predicting the adoption of innovation. Moreover, the corresponding p-value of 0.001 is less than the 0.05 confidence level; hence, the null hypothesis was rejected. This indicates that the strength of the predictive model for the adoption of innovation is significant. This implies that for every unit change in the predictors of the model, there is a corresponding 0.35 overall unit change in the adoption of innovation.

### 3.4. Summary of Findings

1. Relative advantage and compatibility significantly correlate with adoption of innovation
2. The strength of the model (0.35) to predict adoption of innovation, using relative advantage and compatibility as predictors, is significant.

## 4. Discussions

Discussed in this section are the findings of the study. Likewise, the conclusion and recommendations are presented

### 4.1. Relative advantage and compatibility correlate with adoption of innovation.

This study found that relative advantage and compatibility are significantly related to adoption of innovation, indicating that both variables have a positive relationship with adoption of innovation. This finding supports the study of Lisana (2021), reporting that perceived relative advantage influences consumers' intention to adopt mobile payment systems, especially when users recognize clear benefits from using innovative technologies. Likewise, this current finding also affirms Chatterjee et al. (2020), who found that compatibility with existing systems and work practices significantly affects employees' intention to adopt artificial intelligence-integrated customer relationship management systems, emphasizing that innovation

adoption is more likely when technologies align with users' needs and organizational processes. Contrary to the current findings, this study contradicts Olumide et al. (2021), who reported that compatibility does not always significantly influence technology adoption, particularly when users are already motivated by external pressures such as organizational mandates or social influence. This suggests that while relative advantage and compatibility are important predictors, their influence may vary depending on contextual and environmental factors.

#### *4.2. The strength of the model to predict adoption on innovation is significant.*

The finding of this study revealed that the regression model for predicting adoption of innovation, using relative advantage and compatibility as predictors, is statistically significant. The current finding supports the study of Venkatesh (2022), who reported that innovation acceptance models based on UTAUT highlight the importance of perceived usefulness and system compatibility in predicting behavioral intention and technology adoption. Similarly, this current finding also affirms with the study of Ullah et al. (2021), who reported that innovation attributes such as perceived usefulness and compatibility significantly influence users' intention to adopt new technologies, confirming their predictive relevance in explaining technology acceptance across different contexts. However, this current finding contradicts Dwivedi et al. (2021), who reported that when factors such as facilitating conditions, social influence, and organizational support are included in regression models, the direct effects of these innovation attributes may become weaker or partially mediated. This implies that innovation adoption is not solely explained by relative advantage and compatibility, but also by broader contextual factors.

## **5. Conclusion**

Based on the findings, it is concluded that the adoption of innovation, using relative advantage and compatibility as predictors, was significantly forecasted. Hence, the Diffusion of Innovations Theory was affirmed, stating that the adoption of innovation is influenced by individuals' evaluation of different innovation attributes, namely relative advantage, compatibility, complexity, trialability, and observability, that affect their decision to adopt and continuously use innovation.

## **6. Recommendations**

Based on the conclusion, future studies may examine additional variables not included in this study to explain the remaining 65% variance in the strength of the model for adoption of innovation. Furthermore, qualitative or mixed-method approaches may be conducted to generate themes and sub-themes that may be considered as potential variables and corresponding indicators. Finally, educational leaders may implement educational activities that improve relative advantage and compatibility to achieve optimal outcome in adoption of innovation.

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