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RHYTHM & RECALL: EDUBEATZ FOR COGNITIVE-FRIENDLY ECONOMICS EDUCATION

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ABSTRACT

***EduBeatz** offers an innovative approach to teaching business and economics by integrating music and rhythm to enhance memory and engagement. Traditional lecture-based methods often result in low knowledge retention, while active learning techniques, especially those using auditory and visual elements, can significantly improve learning outcomes. **EduBeatz** simplifies complex economic concepts into educational songs using familiar melodies and accessible lyrics, supporting learners with diverse cognitive needs, including short-term memory challenges and dyslexia. In this study, the researchers designed the lyrics and music by incorporating content from selected economics chapters, branding it as **EduBeatz**. To test the effectiveness of the lyrics and music, students were required to answer a questionnaire after listening to the song and lyrics. The study applies the Theory of Planned Behavior (TPB) to examine the intention to adopt music-based learning among 200 undergraduate students at Universiti Teknologi MARA (UiTM) Bandaraya Melaka. Using Partial Least Squares Structural Equation Modeling (PLS-SEM), the results show that Attitude, Subjective Norm, and Perceived Behavioural Control significantly influence students' intention, with Perceived Behavioural Control being the strongest predictor. Findings support **EduBeatz** as an effective and inclusive pedagogical tool with potential applications in classrooms, e-learning, and corporate training. By transforming theory into rhythm, **EduBeatz** makes learning more memorable, accessible, and enjoyable.*

Keywords: Music-based learning, Economics, Education innovation, Cognitive-friendly

INTRODUCTION

Economics education often relies heavily on abstract theories, complex graphs, and models, which can present significant cognitive challenges for students, particularly those with limited attention spans, short-term memory difficulties, or learning differences such as dyslexia. Traditional lecture-based teaching methods, though common, tend to result in low student engagement and poor retention of material. According to the National Training Laboratories, passive learning techniques typically yield only about 5% knowledge retention. Conversely, active learning strategies that incorporate auditory and visual stimuli have been shown to boost retention rates to as high as 80%. To address these challenges, EduBeatz was developed as an innovative, music-based educational tool that leverages rhythmic learning to enhance students' comprehension and long-term retention of key economics and business concepts.

METHOD & MATERIALS

The development and implementation of EduBeatz followed a learner-centered instructional design, structured around three key phases:

- a. **Concept Selection**
Core economic concepts such as demand and supply were carefully selected due to their abstract nature and the common challenges students face in understanding them.
- b. **Lyric Development**
These concepts were then transformed into simple, relatable lyrics. Special care was taken to maintain accessible terminology without compromising the accuracy of economic theories. Each song verse was crafted to align with specific learning objectives and incorporated repetition to support memory retention.
- c. **Melody Adaptation**
Familiar and culturally relevant melodies, including nursery rhymes and popular local tunes, were adapted to accompany the lyrics. This strategy aimed to enhance emotional engagement and leverage the brain's natural affinity for rhythm and repetition, thereby facilitating easier recall.
- d. **Questionnaire to test the effectiveness of lyric and music**
After being exposed to the lyrics and music, 200 undergraduate students participated by completing a questionnaire measuring their intention to study using music. The majority were aged between 21 and 23 years old (61.5%), with 80.5% being female. Additionally, 38% of the respondents were students from the International Business program. These students completed a questionnaire based on the Theory of Planned Behavior (TPB), measuring their intention to study using music.

FINDINGS

This study adopts the Theory of Planned Behavior (TPB) proposed by Ajzen (1991) to examine the factors influencing students' intention to use music and lyrics for learning or memorizing syllabus content. The TPB suggests that behavior is driven by three key factors: Attitude, Subjective Norm, and Perceived Behavioural Control, which collectively shape an individual's intention to perform a behavior.

In the theoretical model (see Figure 1), Attitude reflects students' positive or negative evaluation of using music in learning. It significantly influences intention ($\beta = 0.172$, $p < 0.05$), indicating that students who view music as helpful and enjoyable are more likely to use it. Subjective Norm represents social influence and was also significant ($\beta = 0.233$, $p < 0.01$), showing that encouragement from peers or educators increases students' intention to adopt music-based learning. The strongest predictor was Perceived Behavioural Control ($\beta = 0.514$, $p < 0.001$), highlighting that students' confidence and perceived ability to use music tools greatly enhance their intention.

Together, these three constructs explain 69.7% of the variance in intention, showing that the TPB framework is effective in predicting students' willingness to learn through music. This suggests that promoting positive attitudes, supportive environments, and practical access to music tools can encourage the integration of music into education.

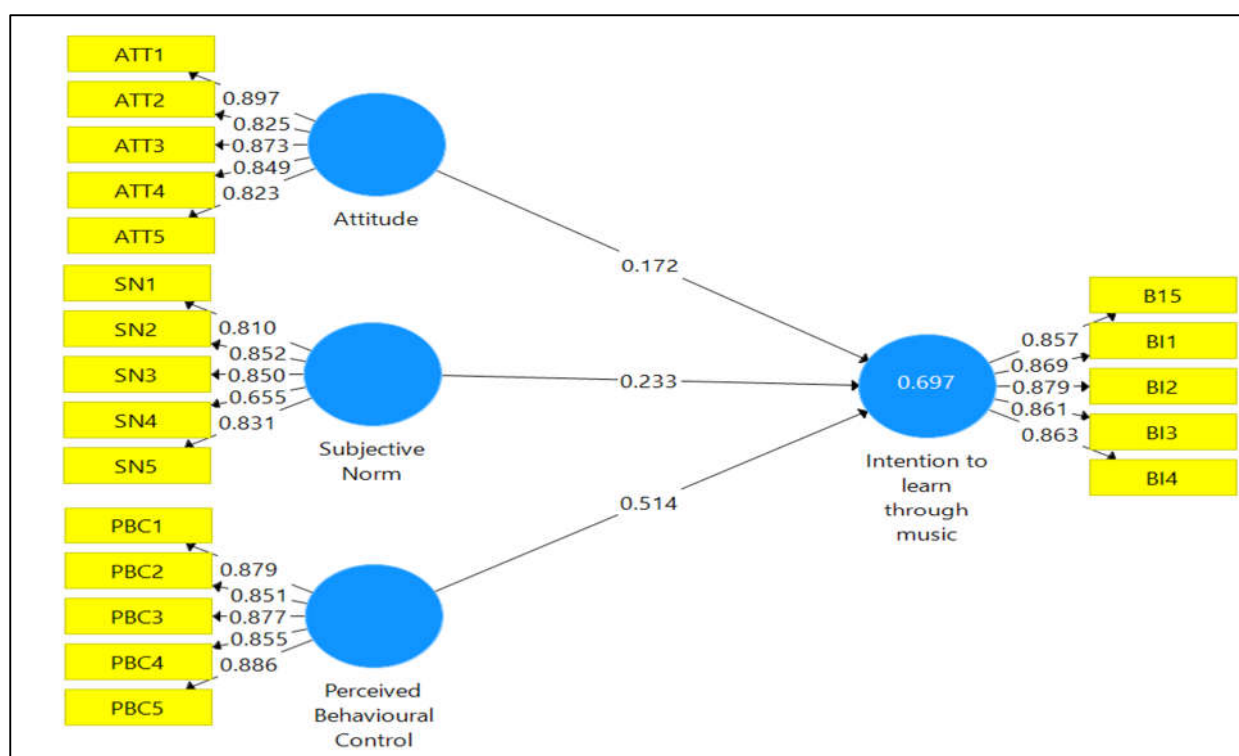


Figure 1.: Theoretical Model of the study

Measurement Model Approach

Table 1 presents the values for Cronbach's Alpha (CA), Composite Reliability (CR), and Average Variance Extracted (AVE) for the constructs of Attitude, Subjective Norm, Perceived

Behavioural Control, and Intention. Cronbach's Alpha and Composite Reliability are used to test internal consistency reliability. All constructs reported CA values above 0.86 and CR values above 0.90, which exceeds the commonly accepted threshold of 0.70. This indicates that the items for each construct consistently measure the intended concept. The AVE values range from 0.645 to 0.756, all of which are above the minimum acceptable value of 0.50. This demonstrates that more than half of the variance in the items is explained by the underlying construct, indicating good convergent validity.

Table 1.: Construct Validity and Reliability

Variables	Cronbach Alpha (CA)	Composite Reliability	Average Variance Extracted (AVE)
Attitude	0.907	0.931	0.729
Subjective Norm	0.862	0.900	0.645
Perceived Behavioural Control	0.919	0.939	0.756
Intention	0.917	0.938	0.729

Fornell-Larcker

To assess discriminant validity, the Fornell-Larcker criterion was applied. In this method, the square root of the AVE for each construct (shown on the diagonal) should be greater than the correlation values shared with other constructs (the off-diagonal values). The diagonal values such as 0.854 for Attitude, 0.866 for Intention, 0.870 for Perceived Behavioural Control, and 0.803 for Subjective Norm are all greater than the corresponding inter-construct correlations. This confirms that each construct is distinct from the others, thus establishing discriminant validity.

HTMT

Further confirmation of discriminant validity was obtained through the HTMT approach. The HTMT values for all construct pairs were below the recommended threshold of 0.90. For instance, the HTMT between Attitude and Intention was 0.738, and between Intention and Perceived Behavioural Control was 0.877. These values indicate that the constructs are empirically distinct and do not overlap excessively.

Structural Model Approach

The findings in Table 2 reveal that Attitude, Perceived Behavioural Control, and Subjective Norm significantly influence the intention to use music and lyrics in educational contexts, particularly for remembering and understanding syllabus content. Among these variables, Perceived Behavioural Control emerged as the most influential, highlighting the importance of self-efficacy and perceived ease of implementation. These results support the application of the Theory of Planned Behavior in the context of music-integrated learning and suggest practical implications for educators seeking to promote creative and engaging methods in their teaching strategies.

Table 2.: Structural Model

H	Direct Effect	β	Std. Error	t-Value	p-Value	Result
H1	Attitude > Intention	0.172	0.082	2.090	0.037	Accepted
H2	Perceived Behavioural Control > Intention	0.514	0.091	5.670	0.000	Accepted
H3	Subjective Norm > Intention	0.233	0.069	3.375	0.001	Accepted

Overall, this study demonstrates the effectiveness of integrating music and lyrics into economics education through the EduBeatz approach. Lyrics and melodies were carefully designed by the researchers based on selected economic concepts to simplify and enhance understanding. These educational songs were then presented to students, who were subsequently asked to complete a questionnaire to assess their acceptance and intention to use music as a learning tool. Using the Theory of Planned Behavior (TPB), the findings reveal that Attitude, Subjective Norm, and Perceived Behavioural Control significantly influence students' intention, with Perceived Behavioural Control emerging as the strongest predictor. The results from undergraduate students at UiTM Bandaraya Melaka suggest that music-based learning is well accepted and offers cognitive support, particularly for diverse learner needs. EduBeatz presents a creative, inclusive, and engaging teaching method that can be further explored across disciplines and educational platforms.

DISCUSSION

EduBeatz marks a transformative advancement in teaching strategies by integrating music and rhythm into economics and business education. This method aligns closely with active learning principles, which prioritize learner engagement, multisensory experiences, and emotional connections to the material. By distilling complex economic theories into structured, rhythmic songs, EduBeatz effectively tackles common challenges of traditional lecture-based approaches—namely, low retention and student disengagement. The observed and anticipated gains in comprehension and recall highlight EduBeatz's effectiveness for a diverse range of learners, including those with cognitive differences such as dyslexia and short-term memory difficulties. By pairing musical rhythm with core economic concepts, the approach leverages dual coding theory, where verbal and non-verbal cues work together to strengthen memory pathways and enhance learning outcomes. Furthermore, EduBeatz's interactive format fosters greater student participation, alleviates anxiety around challenging content, and boosts intrinsic motivation. These benefits not only improve academic achievement but also enrich the overall learning experience, making education more inclusive and enjoyable. Significantly, EduBeatz's flexible design allows for easy adaptation beyond economics, making it suitable for other academic subjects, language learning, and even corporate training—particularly within digital or e-learning platforms. As such, EduBeatz represents a scalable and innovative educational tool that meets the demands of 21st-century learning and supports cognitive-friendly teaching practices (Rosman, Ismail, & Masrek, 2021).

CONCLUSION

EduBeatz presents an innovative reimagining of business and economics education by converting complex, abstract theories into captivating, rhythm-based content. By tapping into learners' cognitive strengths especially those facing memory or learning challenges EduBeatz shows great promise in enhancing both knowledge retention and student engagement. These anticipated benefits underscore the effectiveness of music-based learning as an inclusive and impactful alternative to traditional lecture methods. Additionally, EduBeatz's versatility and broad appeal position it well for expansion across various disciplines and educational levels. It holds potential for seamless integration into digital learning environments, licensing opportunities for educational institutions, and incorporation into corporate training programs. As education continues to evolve toward learner-centered and cognitively responsive models, innovations like EduBeatz demonstrate that making learning both memorable and meaningful can lead to profound, lasting impact.

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