

Demand Analysis And Willingness To Pay (Wtp) Estimation For Digital Dentistry Technology Among Students Of The Faculty Of Dentistry, Andalas University

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ABSTRACT

Development digital dentistry technology has bring change significant in system education and practice medical modern teeth. Use technology such as intraoral scanners, computer-aided design/computer-aided manufacturing (CAD/CAM), virtual articulators, and three-dimensional printing (3D printing) are assessed capable increase efficiency, accuracy, and quality learning clinical student medical teeth. However Thus, the implementation digital dentistry technology requires cost relative investment tall so that required analysis economy related demand and capacity pay users to facility said. Research This aim For analyze request student as well as estimate Willingness to Pay (WTP) for use digital dentistry technology for students Faculty Andalas University Dentistry. Research results show that perception benefits and efficiency own influence significant towards students' WTP to digital dentistry technology ($p < 0.05$). Barriers costs also show influence significant to decision student in pay use digital dentistry facilities. Meanwhile that, variable knowledge and stages education show connection positive However No all of it significant in a way statistics. findings study show that student look at digital dentistry technology as investment capable education increase quality learning and readiness face development practice medical modern teeth.

INTRODUCTION

Digital transformation in field health has bring change big to practice medical modern teeth. Development Digital dentistry technologies such as intraoral scanners, computer-aided design/computer-aided manufacturing (CAD/CAM), virtual articulators, and three-dimensional printing (3D printing) have increase efficiency, accuracy, and quality service medical teeth. Technology the enable the process of diagnosis, planning maintenance and manufacturing restoration done in a way more fast and precise compared to method conventional. Besides implemented in practice clinically, digital dentistry technology is also

starting to integrated in system education medical teeth in various country. Integration digital technology in education medical tooth assessed capable increase quality learning student through visualization more cases good, improvement skills clinical, as well as efficiency in the learning process practicum. Students who have experience use digital dentistry technology tends to own greater readiness Good in face developments in the world of work medical modern teeth. However Thus, the implementation digital dentistry technology requires investment sufficient cost big, good For procurement tools, maintenance facilities, as well as training use technology.

In perspective economy education, provision digital dentistry facilities can viewed as form investment education that requires allocation source Power in a way efficient. Therefore that, is necessary analysis about request student to use digital dentistry technology and ability pay student to facility said. Analysis request become important For avoid the occurrence of over-investment or under-utilization in development facility education based digital. The concept of Willingness to Pay (WTP) is used For measure mark the economy provided individual to something goods or service based on perceived benefits. In context education medical teeth, WTP can used For estimate ability and willingness student in pay use digital dentistry technology. The Contingent Valuation Method (CVM) approach allows estimate WTP value is carried out although Not yet there is mechanism clear market price to facility learning said. Research regarding WTP in field medical tooth part big Still service - focused clinical and patient, whereas study about valuation economy technology digital education in the field medical tooth Still limited. Therefore that, research This done For analyze demand and estimating student WTP Faculty Andalas University Dentistry to use digital dentistry technology and identify factors that influence it.

RESEARCH METHODS

Research Design

Study This use approach quantitative with design cross-sectional analytic approach This used For analyze connection between factor economic and non- economic on students' Willingness to Pay to use digital dentistry technology.

Location and Time of Research

Study implemented at the Faculty Andalas University Dentistry in 2026.

Population and Sample

Population in study This is all over student active Faculty Andalas University Dentistry. Dental extraction techniques sample done using purposive sampling with consider criteria inclusion and exclusion that have been set researcher.

Data collection technique

Data collection was carried out use questionnaire based on the Contingent Valuation Method (CVM). Instrument study consists of on a number of the part that includes characteristics respondents, knowledge regarding digital dentistry, perception benefits and

efficiency technology, barriers costs, as well as question related to students' Willingness to Pay to use digital dentistry technology.

Variables Study

Variables dependent in study This is the Willingness to Pay (WTP) of students to use digital dentistry technology. Variables independent includes:

1. Parents income
2. Knowledge student about digital dentistry
3. Perception benefits and efficiency technology
4. Obstacle cost
5. Stages education

Data analysis

Data analysis was performed use analysis descriptive For describe characteristics respondents and student WTP estimates . Furthermore done interval regression analysis for identify factors that influence students' WTP to use digital dentistry technology.

Interval regression model in study This formulated as following:

$$WTP = \beta_0 + \beta_1PU + \beta_2CB + \beta_3KN + \beta_4ES + \varepsilon$$

Information :

- WTP: Student Willingness to Pay
- PU: Perceived usefulness
- CB: Cost barrier
- KN: Knowledge
- ES: Educational stage
- ε : Error term

RESULTS AND DISCUSSION

According to theory request put forward by Mankiw (2021), behavior consumer in use something goods or service influenced by preferences, income, and perceptions benefits obtained from goods or service said. In context education medical teeth, students as users digital dentistry technology will consider benefit academic and costs that must be issued before decide For use facility said. Research previously carried out by Zitzmann et al. (2020) shows that digital dentistry integration in education medical tooth capable increase efficiency learning and readiness student face development practice medical modern teeth. In addition that, Li et al.'s (2025) research explains that experience use digital technology in learning clinical increase interest and acceptance student to use digital dentistry technology.

Research result show that majority respondents is student stage academic and professional that has know use digital dentistry technology in the learning process. Most of student state that digital dentistry technology is capable increase quality learning clinical and skills practice medical teeth. The concept of Willingness to Pay (WTP) is part from theory valuation the economy used For measure mark economy something goods or service based on

perception perceived benefits individual. According to Hanemann (1991), WTP describes amount maximum willing paid individual For get benefit from something service or facility certain. In study This, WTP is used For measure ability and willingness student in pay use digital dentistry technology as means support learning.

Study Steigenberger et al. (2022) explains that willingness to pay in field health and education influenced by perception benefits, level income and experience use technology. Research Khoiri et al. (2024) in Indonesia also showed that perception benefit own connection significant on user willingness to pay to service based technology. Estimation results show that part big student have a positive Willingness to Pay to use digital dentistry technology. Students evaluate that use digital dentistry technology provides benefit in increase efficiency learning, quality visualization cases, as well as readiness face development practice medical modern teeth.

Interval Regression Analysis Results

Table 1. Results of Interval Regression Analysis

Variables	Coefficient (Value)	Std. Error	z-value	p-value	Interpretation
Intercept	384,000	180,000	2.13	0.03287	Constant significant
Parents ' Income	20,300	17,200	1.18	0.0373	Influential positive and significant
Knowledge Student	18,000	36,900	2.55	0.04094	Influential positive and significant
Perception Utilities	170,000	40,200	4.22	0.00002	Influential positive and very significant
Obstacle Cost	-133,000	35,400	-3.76	0.00017	Influential negative and significant
Educational level	103,000	52,800	2.53	0.01155	Influential positive and significant

Based on results interval regression analysis, variables perception utilities show influence positive and very significant on students' Willingness to Pay to use digital dentistry technology ($p < 0.05$). Coefficient value of 170,000 shows that improvement perception benefits and utilities digital dentistry technology will increasing students' willingness to pay to use facility the.

Besides that, variable parents income show influence positive and significant on students' willingness to pay. These results show that student with level ability economy more family Good tend own willingness pay more tall to use digital dentistry technology.

Variables knowledge students also showed influence positive and significant on students' willingness to pay. Students who have understanding more Good about benefits and uses digital dentistry technology tends to own perception positive to importance use technology the in the learning process.

Variables level education show influence positive and significant on students' willingness to pay. Students stage profession own a tendency towards greater willingness to pay tall compared to student stage academic Because own need more clinical big to use digital dentistry technology.

On the other hand, the variable obstacle cost show influence negative and significant on students' willingness to pay . The coefficient value negative show that the more tall perception obstacle perceived costs students, then the willingness to pay for use digital dentistry technology tends to decreased. In theoretical, results This in accordance with the Technology Acceptance Model (TAM) developed by Davis (1989), which states that perceived usefulness is factor main influencing factors reception technology by users. Students who assess that digital dentistry technology is capable increase quality learning, efficiency practice clinical, and digital skills will own a tendency towards greater willingness to pay high. Research previously by Al-Harbi et al. (2023) also shows that perception benefits and efficiency use digital technology has connection positive to satisfaction users and interests use technology in education health. Findings Abdulaı and Suradı (2025) also reported the same thing that student medical teeth that have experience direct to the use of CAD/CAM and virtual articulator shows level reception more technology high. Students who have perception more benefits tall to digital dentistry technology tends to have a higher willingness to pay big compared to students who have perception benefit low. The cost barrier variable also shows influence significant towards students' WTP . Obstacles cost be one of factor main influencing factors decision student in use digital dentistry technology. Increasingly tall perception obstacle perceived costs students, then students' willingness to pay tendency become more low. The knowledge and educational stage variables show connection on students' willingness to pay, but No all of it significant in a way statistics. This is show that although knowledge and stages education contribute to perception student to digital dentistry technology , factors benefits and obstacles cost still become factor dominant in determine students' willingness to pay.

DISCUSSION

Research result show that student Faculty Andalas University Dentistry own perception positive to use digital dentistry technology in the learning process. Digital dentistry technology is seen capable increase quality learning clinical through visualization more cases good, efficiency procedure practical work, as well as improvement skills student in face development practice medical tooth modern. Perceived usefulness becomes the most influential factor on students' willingness to pay. These results in line with the Technology Acceptance Model (TAM) theory which states that perception benefit technology is factor main influencing factors acceptance and use technology by individuals. Students who assess that digital dentistry technology provides great benefits to learning tend have a higher willingness to pay tall.

Obstacle costs also show influence significant on students' willingness to pay. In perspective theory demand, price and cost is factor main influencing factors decision consumption individual. Nicholson and Snyder (2017) explain that individual will considering the trade-off between benefits obtained with costs that must be issued before take decision consumption. Increasingly tall the costs felt, then trend request to something goods or service will decrease.

Study Gredes et al. (2022) shows that limitations economy and access facility become obstacle main in adoption technology education health digital- based research the explain that student with limitations financial tend have a higher willingness to pay low to technology learning digital- based even though own perception good benefits. Findings This show that factor economy Still become consideration main in adoption technology learning digital-based. Students tend consider ability economy before decide For pay use digital dentistry facilities. In perspective theory request , condition the show that request to digital dentistry technology is influenced by the trade-off between benefits obtained and costs incurred issued.

Knowledge student regarding digital dentistry shows connection on willingness to pay even though No all of it significant in a way statistics. According to theory behavior consumer, level knowledge individual to something product or technology can influence preferences and decisions usage. Venkatesh et al. (2003) explains that individuals who have level knowledge and experience more technology Good tend more easy accept innovation technology new. Research previously by Li et al. (2025) show that exposure digital and experiential learning use digital dentistry technology contributes to improvement competence student medical teeth . This is show that improvement knowledge and experience student to digital dentistry technology can increase readiness use technology the in the learning process. This show that improvement education and exposure to digital dentistry technology can increase readiness student in accept innovation technology learning. Stages education also shows connection on students willingness to pay. Students stage profession tend own exposure more clinical tall compared to student stage academic so that need to digital dentistry technology is also becoming more big . In theory utility, individual will increase request to something service if service the assessed capable give more utilities tall to activity main thing that is run.

Study Zitzmann et al. (2020) explain that student level clinic show level reception more digital dentistry technology tall compared to student stage beginning education Because own experience direct to need technology in practice clinical. Therefore that, the stages education be one of influencing factors perception benefits and willingness to pay of students to digital dentistry technology. Students stage profession tend own perception more benefits tall to digital dentistry technology compared student stage academic Because own exposure more clinical big to need use technology in practice medical teeth. In overall, results study show that development digital dentistry facilities are needed consider aspect benefit technology, capabilities economy students, as well as more financing strategies adaptive. Institution

education need designing policy subsidies, cost-sharing schemes, and development facility in a way gradually For increase access student to digital dentistry technology.

CONCLUSION

Student Faculty Andalas University Dentistry show positive demand to use digital dentistry technology in the learning process. Perception benefits and efficiency technology become the factors that most influence students' willingness to pay to use digital dentistry technology. Barriers costs also have an effect significant to decision student in pay use digital dentistry facilities.

Study This show that development digital dentistry technology in institutions education need consider ability pay student as well as perceived benefits student to use technology mentioned. Besides that, is necessary policy more financing adaptive For increase access student to facility learning digital- based.

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