

# Evaluation of Dentists’ Perceptions and Intention to Use Voice Assistant Technology

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## PURPOSE

- To determine dentists’ perceptions about voice assistant technology (VAT).
- To understand factors that influence dentists’ intention to use VAT.
- To determine dentists' behavioral intention to use VAT.

## BACKGROUND

- Dental practitioners currently use dental auxiliaries to input data into the EHR.
- VAT in the dental office could provide hands-free navigation and data entry to the electronic health record.
- VAT could improve data accuracy, reduce time and needed personnel, and maintain a more hygienic workspace.

## METHODS

### Survey Instrument

- A 31 question survey instrument was constructed, based on an extended version of the Unified Theory of Acceptance and Use of Technology (UTAUT) Model
- The extended UTAUT Model used consisted of 8 constructs.
- A separate construct consisting of 8 questions was developed to measure the relationship between dental application of VAT and behavioral intention to use this technology.
- A 5-point Likert scale was used to measure responses
- Demographics questionnaire included.
- The survey was sent to dentists licensed by the Ohio State Dental Board.

### Hypotheses Tested

H1: **Effort expectancy** influences intention to use VAT.

H2: **Performance expectancy** influences intention to use VAT.

H3: **Perceived enjoyment** influences intention to use VAT.

H4: **Satisfaction** influences intention to use VAT.

H5: **Trust** influences intention to use VAT.

H6: **Self-efficacy** influences perceived enjoyment of using VAT.

H7: **Dental application** influences intention to use VAT.

H8: **Perceived risk** influences intention to use VAT.

### Statistical Methods

- Cronbach’s Alpha and composite reliability measured the internal validity of the constructs.
- Average variance extracted measured the convergence validity of the constructs
- Partial Least Squares Regression was used to measure the main effects of the constructs.

## RESULTS

### Results

- Performance expectancy, perceived enjoyment, perceived risk, and dental application were significantly correlated with behavioral intention to use VAT.
- Self-efficacy was significantly correlated with perceived enjoyment.
- Performance expectancy showed the highest correlation with behavioral intention in this model.
- The model explained 75.4% of the variance in behavioral intention to use VAT.

Table 2. Construct Reliability Results.

Construct	No. of items	Cronbach’s α	AVE	CR
Self-efficacy (SE)	3	0.79	0.704	0.878
Perceived Enjoyment (PEN)	3	0.87	0.793	0.920
Perceived Risk (PR)	3	0.76	0.601	0.864
Effort Expectancy (EE)	5	0.88	0.671	0.912
Performance Expectancy (PE)	4	0.93	0.82	0.948
Satisfaction (SAT)	5	0.91	0.729	0.931
Trust (TRU)	5	0.82	0.587	0.877
Dental Application (DEN)	8	0.86	0.507	0.891
Behavioral Intention (BI)	3	0.87	0.795	0.921

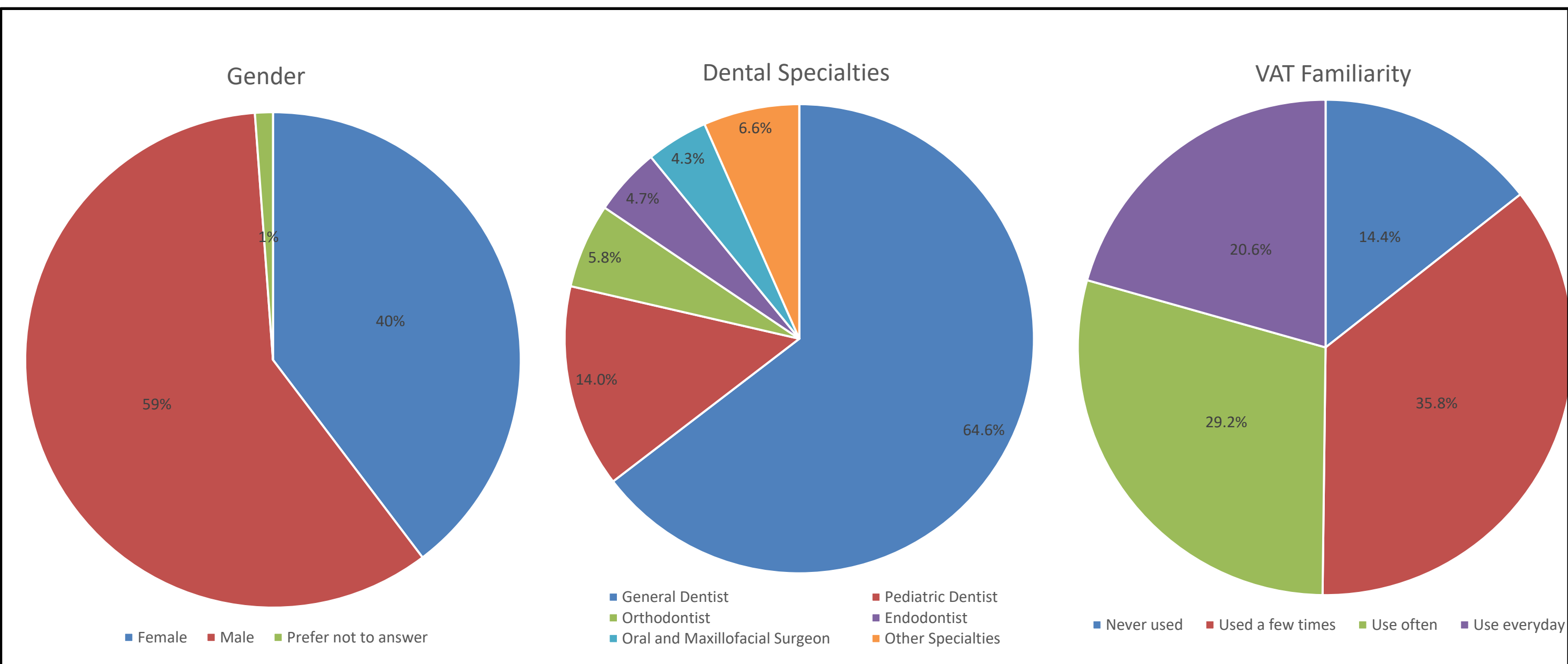
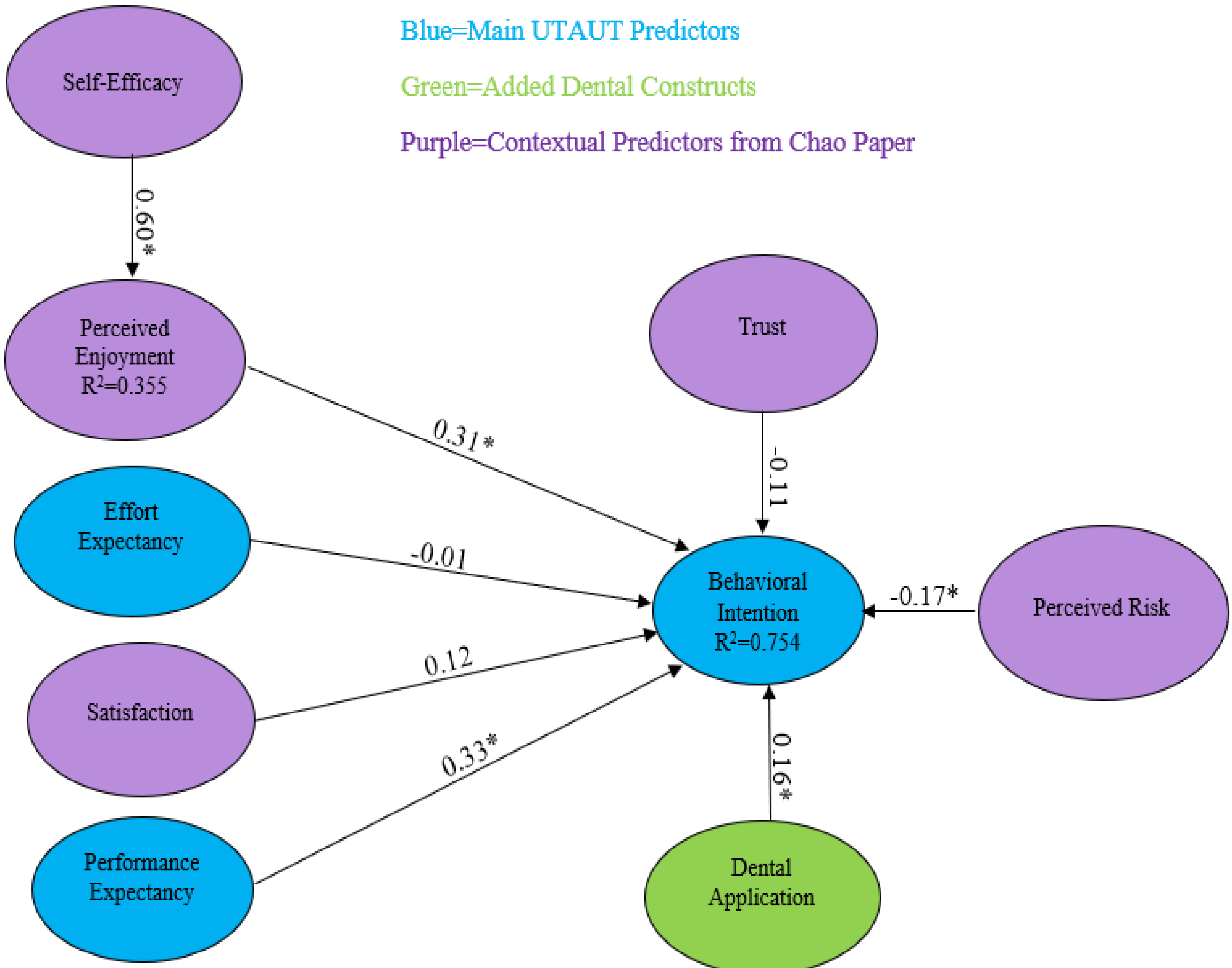
AVE, Average Variance Extracted; CR, Composite Reliability

Table 4. Hypothesis Tests

Hypothesis	Relation	Total Effect	P Value	Status
H6	SE -> PEN	0.60	<0.0001	Supported
H3	PEN -> BI	0.31	<0.0001	Supported
H1	EE -> BI	-0.01	0.86	Not supported
H2	PE -> BI	0.33	<0.0001	Supported
H4	SAT -> BI	0.12	0.07	Not supported
H5	TRU -> BI	-0.11	0.06	Not supported
H7	DEN -> BI	0.16	<0.001	Supported
H8	PR -> BI	-0.17	<0.0001	Supported

Total Effect, Correlation between constructs

Supported Hypothesis, P<0.05



## DISCUSSION

- Performance expectancy and perceived enjoyment are major factor in dentists’ decision to use VAT.
- The risk of privacy infringement may discourage dentist from using VAT.
- The ability to use the software has a significant, positive effect on the dentists’ level of enjoyment in using VAT.

- Limitations:
  - Sample size was small and made up of a convenience sample of licensed, Ohio dentists.
  - The results may not be applicable to dentists in other geographical locations.
  - The use of email to distribute the survey may have introduced bias into a study inquiring about a novel technology.

## CONCLUSIONS

- Dental application of voice assistant technology, such as the speed and accuracy of inputting patient information, plays a role in future use of VAT.
- Performance and enjoyment of using VAT are the greatest predictors of future use.
- Increased measures in ensuring privacy will need to be taken in developing this software for dental offices.
- Future research is needed to study a wider sample.

## REFERENCES

