Digital Dentistry: Exploring Digital Transformation in Dentistry at the SSMD Clinic

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Introduction

- Digital transformation in healthcare includes a variety of digital technologies that rapidly contribute to the evolution of healthcare.
- Digital transformation has had a massive influence on the Dental industry as common practices in dentistry continue to shift from traditional methods to digitally backed processes. This impacts not only dental practices but also dental education.
- Although there is an upward trend of digital transformation in healthcare, the adoption of certain innovations in the healthcare field and particularly in dentistry are yet to be fully explained.
- This research examined the diffusion of intraoral cameras (IOCs) in SSMD clinics, given their low adoption rates.
- **The study was evaluated through Everett Rogers' Diffusion of Innovation Theory**, which states that in most cases, the diffusion process follows 5-6 phases as adoption goes from early innovators to laggards. Depending on the adopter category, an individual may choose whether or not to adopt the innovation. Early adopters are more likely to adopt an innovation, while laggards are less likely to adopt an innovation.
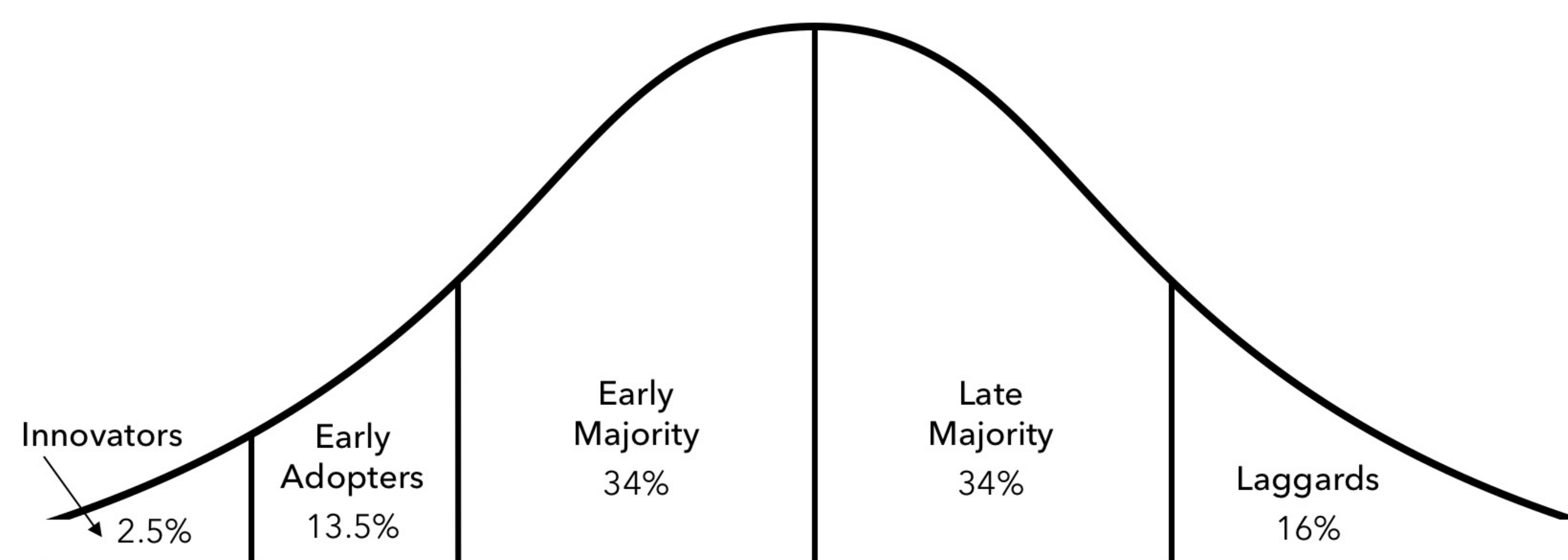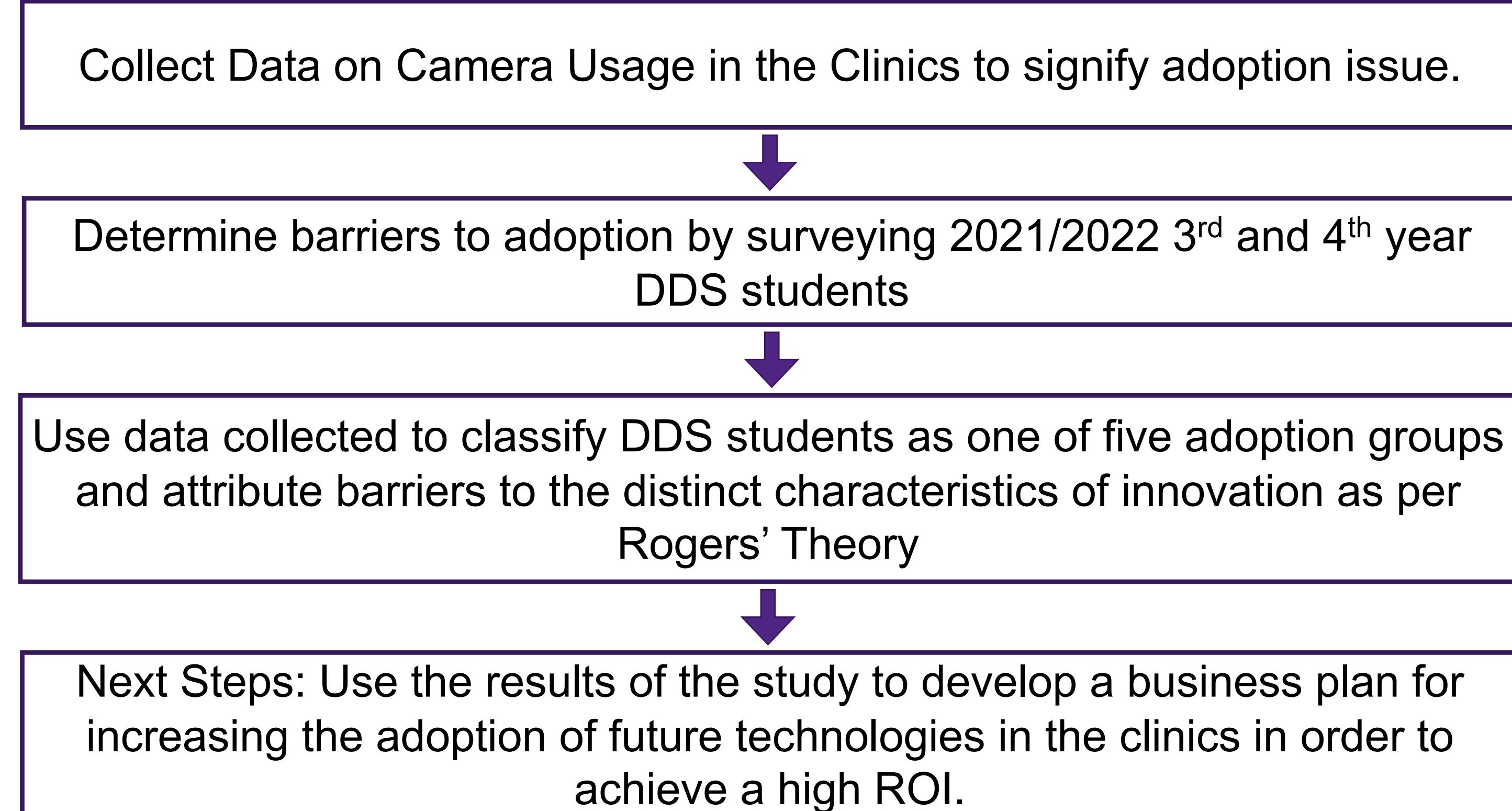
Figure 1. Diffusion of Innovation Adopter Categories, Everett M. Rogers, Diffusions of Innovations, 5th ed. (New York: Free Press, 2003), p. 281.

- Characteristics of the innovation itself will also contribute to whether or not it is adopted. The five distinct characteristics in the theory to explain this phenomenon are **observability, relative advantage, complexity, compatibility and trialability of the innovation.**

Objectives

- **To identify primary barriers to adopting intraoral cameras in SSMD Clinics.**

Methodology

Collect Data on Camera Usage in the Clinics to signify adoption issue.

Determine barriers to adoption by surveying 2021/2022 3rd and 4th year DDS students

Use data collected to classify DDS students as one of five adoption groups and attribute barriers to the distinct characteristics of innovation as per Rogers' Theory

Next Steps: Use the results of the study to develop a business plan for increasing the adoption of future technologies in the clinics in order to achieve a high ROI.

Results

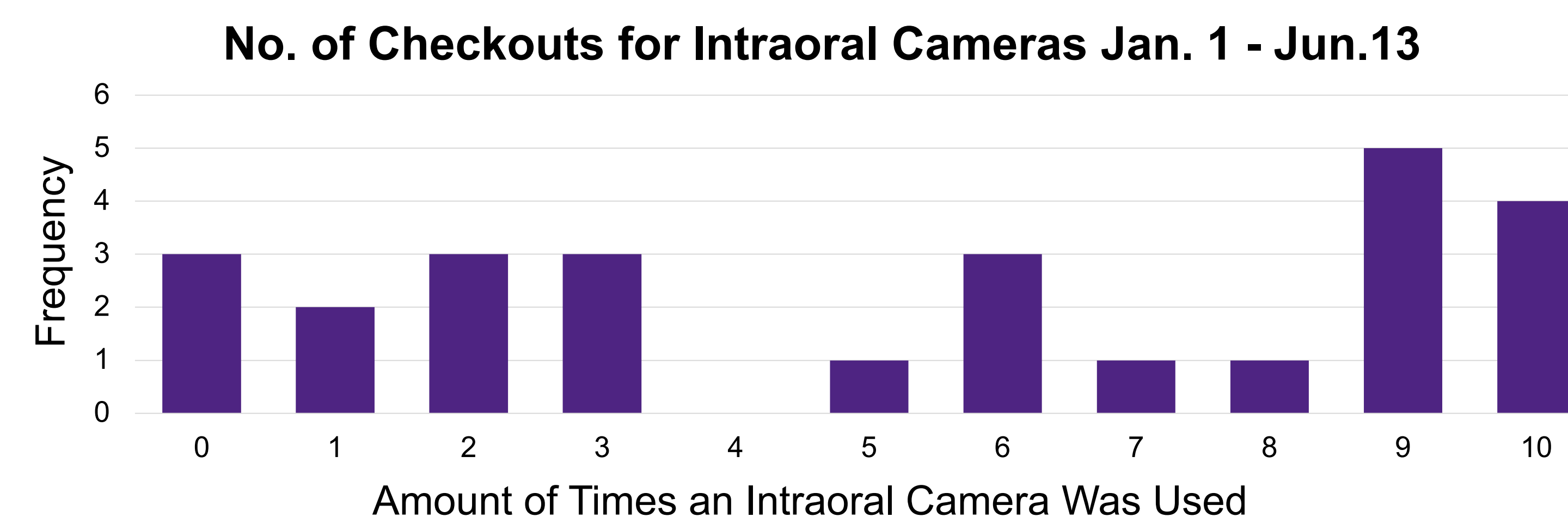### No. of Checkouts for Intraoral Cameras Jan. 1 - Jun.13

Figure 2. Data on intraoral camera usage signifying the frequency of usage of 26 cameras throughout 204 clinic sessions, indicating an overall 2.64% usage rate for the cameras throughout the 2021/2022 Academic Year.

Characteristic of Innovation	Statement	% of respondents who said YES	% of respondents who said NO
Observable	The outcome of this innovation is easily observable and measured by others	69.2%	26.7%
Relative Advantage	This innovation is advantageous with regards to efficiency	23.1%	76.9%
Complexity	This innovation is difficult to use	69.2%	26.7%
Compatibility	Are the intraoral cameras compatible with existing technologies in the clinics	100%	0%

Table 1. Percentage of Respondents who identified IOCs as either complex, non-observable, incompatible or relatively non-advantageous from fifteen 3rd and 4th year DDS students that were surveyed. Trialability was not considered in this scenario as there is an abundance of IOCs accessible to all students.

Conclusion

- The Schulich School of Dentistry only tagged 26 IOC given their low adoption rate. As such, utilization was determined by projecting the usage of 26 IOCs in 204 clinical sessions. It was assumed that each IOC should be used at least once per session, resulting in a calculated 2.64% utilization rate. This clearly signified the low adoption of the cameras.
- The students surveyed were all classified as **early adopters – early majority** making up approximately 47.5% of adopters. This was determined as 100% of the students surveyed said they would likely adopt an innovation if provided by their institution, with 76.9% of students stating they are more likely to adopt an innovation if further encouraged by their professors.
- Through classification of the DDS students, it was evident that in this scenario, the lack of adoption came from the innovation itself rather than the adopter.
- Results of the study showed that most students found **complexity and relative advantage** to be the primary hindering attributes to this innovation. Further exploration revealed that most students complained about the timing it took to set up the cameras, their low image quality and lack of necessity during appointments.
- These issues could be attributed to the poor functionality of the cameras and the use of non-native software for operation, which necessitates the use of an assistant, thus decreasing the relative advantage and increasing the complexity. Some students also stated that they were not frequently reminded to use the IOCs by their professors.

Acknowledgements

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