Analyzing Perceptions on AI and its Incorporation into the Facility Management Domain and Campus Facilities within BUas

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Abstract

The incorporation of artificial intelligence (AI) across different domains has grown in significance in higher education. This study delves into students' perspectives and attitudes regarding AI in the context of the facilities management program at Breda University of Applied Sciences (BUas) and the prospective integration of AI into BUas campus facilities. The main objective of this research is to conduct a thorough examination of how students and teaching staff in the facilities management program perceive the adoption of AI in their academic curriculum and in their field of study. Furthermore, this study aims to investigate students' personal experiences with campus facilities, as well as their perspectives toward the possible acceptance of AI inside these facilities. To achieve these goals, both quantitative and qualitative approaches, such as interviews and surveys, were used to examine students' and teaching staff's knowledge, experiences, and attitudes regarding AI.

Keywords: Artificial Intelligence, Facility Management

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Introduction

In light of AI increasing popularity in educational settings, there is a growing demand for its incorporation into facility management education and training programs. The issue of concern is the lack of AI integration into facility management curricula. What this leads to is a mismatch between the students' knowledge and abilities with the shifting demands in the industry. For this reason it is important for Breda University of Applied Sciences to gain insights into how students and teaching staff perceive AI and its incorporation within the domain. This will help policymakers in making informed decisions about incorporation of AI into facility management programs, afterwards guiding the establishment of effective policies that can improve the educational experience and prepare students for the changing landscape of the facility management industry.

Research Objective

The primary aim of this research is to conduct an in-depth analysis of the current perceptions and attitudes of students toward the use of artificial intelligence (AI) within the context of the facilities management program at Breda University of Applied Sciences. In addition to this, I intend to explore how students view the integration of AI within their field of study and its application within the various facilities on the BUas campus. This research is focused on two main aspects. First is to analyze how students in the facilities management program at Breda University of Applied Sciences currently perceive the use of AI in their academic curriculum and field of study as well as to explore students personal experiences and interactions with campus facilities and what are their attitudes concerning the potential incorporation of AI into these facilities.

Literature Review

AI in Facility Management

Facility management is a vast field that includes a variety of tasks involving maintaining and supervising buildings, facilities, and infrastructure. These responsibilities are critical for ensuring that these structures and systems continue to function successfully. In today's fast-paced world, technology, particularly artificial intelligence, is rapidly evolving. This technology holds great potential to improve how facility management works.(M2C, 2023)

Current facility management practices and procedures, according to Ensafi and Thabet, 2021, face a number of data management difficulties, including data loss, inefficiencies in information retrieval, and problems with interoperability. Furthermore, a lack of effective decision-making techniques and maintenance planning can result in increased operating expenses, lowering the overall quality of facility management.

AI in Higher Education

The expanding influence of Artificial Intelligence on industries and society in the Netherlands has naturally grown to the field of education. The establishment of the National Education Lab AI (Nationaal Onderwijslab AI, NOLAI), generously sponsored by the National Growth Fund, is a crucial reaction to this trend. NOLAI, which was launched on October 6th, acts as a collaborative platform where educational institutions, researchers, and the corporate sector come together to pioneer digital educational innovations infused with AI technology.(Molenaar and Dormans, 2022)

With the ever-expanding influence of artificial intelligence in every sector, Dutch universities of applied sciences have taken a significant step forward in harnessing its potential. For example, Amsterdam University of Applied Sciences has established an applied artificial intelligence expertise center, where students from all faculties will learn how to apply AI in their field of study. (HvA, 2021)

Gaps in the Literature

Recent studies have explained the possible educational advantages of Artificial Intelligence (AI). Joshi et al., 2021 underline that a better understanding of how AI can enhance educational skills can benefit teachers as well as students. According to their research findings, effective AI utilization can have a significant positive effect on the quality of education outcomes. Another notable study, conducted by Kumar and Raman, 2022 with 682 students in a Business Management Master program, demonstrates a high positive correlation between their perceptions of AI use in academia and their endorsement for AI integration in the teaching and learning processes. This study's qualitative data supports the hypothesis that AI can improve the teaching and learning process, making it more efficient.

In conclusion, the reviewed literature highlights the positive influence of AI on educational settings and learning outcomes. However, when it comes to the specific use of AI in the context of facility management programs, there is a notable literature gap that demands investigation. This gap indicates the need for more investigation into the specific challenges, opportunities, and strategies related to incorporating AI education within facility management curricula. Addressing this literature gap is critical for providing students in this field the necessary knowledge and skills to effectively manage the rising demands of AI in facility management.

Research Design

This study uses a mixed-methods approach, including both quantitative and qualitative methodologies. For this matter I formulated research questions adapted to each approach: *How can the opinions of students and teaching staff regarding the incorporation of AI into campus facilities provide insights into its impact on their overall campus experience? What do individuals in facility management program think about the incorporation of AI in their domain, and how do such perceptions compare to the intention to use it in their field of study? What factors can be considered as potential predictors for*

the intent to incorporate AI within all domains and which specific predictor holds the most significance for this intention, particularly within the context of a facility management program?

In the context of the quantitative research I have used likert type variables from dataset gathered from online survey. These variables measure perceptions towards AI. As for the qualitative method, my research team conducted four pre-planed interviews, two of which are used for this study. This method was used to compare the viewpoints of both students and teaching staff on the incorporation of AI in BUas campus facilities.

Hypotheses

I formulated the following hypotheses in order to be able to conduct quantitative research with regards to the research questions as my starting point:

H_0: No statistically significant difference exists between the means of experience with AI and the interest to incorporate AI into the facility domain ($\mu_1 = \mu_2$).

H_0: The familiarity with AI concepts has no correlation with the intention to use it in the facility domain. ($\beta_1 = 0$)

Methods

Participants

An Qualtrics survey was crafted from Data Science & AI students. The survey was designed to collect quantitative data within all BUas domains, including facilities. Participation in the survey was limited to individuals within the BUas organization. They could access the survey via link or QR code. Participants were prompted to click the "I consent" button to enter the survey, confirming their permission to allow data collection for research purposes. Anonymity was guaranteed, however individuals who choose to enter a giveaway were required to submit their student number, which means they are no longer anonymous. In total, there were 530 participants, where 50 of those participants were from the facility management program. It is preferable to collect a sample size of at least 30 participants for this study in order to reduce sampling errors.

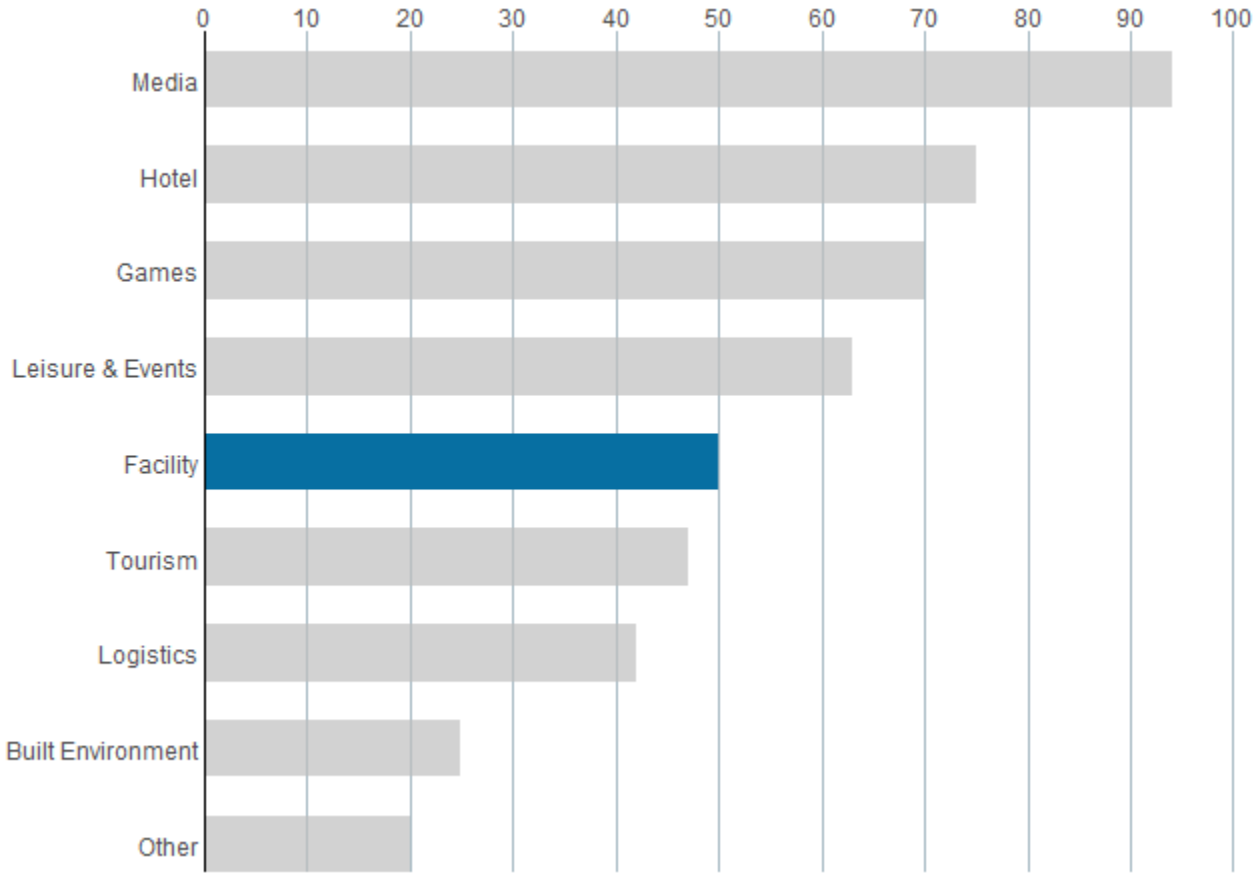

Figure 1

Participants from all domains

Materials

Materials that are collected for the quantitative research include demographic information about the participants and domain specific data that measures how the participants agree with specific statements for their field of study. Additionally, AI-related data to evaluate their perceptions of AI knowledge and experience. Initially, my research team, focused on the facility domain, created a preliminary test version of the survey targeting facility management students, teaching staff and industry professionals. However, due to ethical considerations, we closed this preliminary survey and no materials from this survey were used for this study. It's important to note that the questions in both surveys are identical. Quantitative research relies only on the data collected from the primary

survey which was designed by students and tested by teaching staff from the Data Sciene & AI programme. These materials are stored in .csv files that consist of both numerical and textual data. Materials obtained for the qualitative research are informed consents with which participants agree to be involved in the research study. The qualitative data obtained from the interviews is stored in .tex files containing transcripts. Materials from the interview can be found in Appendix A, the structure of the survey questions can be found in Appendix B.

Design

The research instrument used in this study was a structured survey that was prepared to collect necessary information from the participants. The survey's form was built to include three main sections. The first section of the survey is focused on demographic information, encompassing variables such as age, gender, educational background, and years of experience. Participants' profiles are summarized here, allowing for a more detailed exploration of the data. The second section of the survey focused on AI-related questions, investigating individuals' knowledge and experiences with AI. The final section included domain-specific questions that were carefully chosen after reviewing the literature and engaging with the stakeholder. These questions assess participants' views and attitudes regarding the key elements of their respective fields of study.

Procedure

The duration of this study was two months. It is important to mention that participants' motivation to engage with both the survey and interviews was crucial to the success of this study. In the context of the quantitative research statistical analyses were conducted using the R programming language.

Data Aggregation

The data collection phase for the quantitative research took approximately three weeks to complete. The Qualtrics survey was used to obtain all of the data. Following the data collection phase, I stated on data cleaning to ensure the reliability and quality of the

dataset. This required removing irrelevant columns and addressing missing values. Afterwards, I organized the data into two distinct data frames: data from all domains and data specific to the facility domain with 530 and 50 observations respectively. The clean data was stored in .csv files and prepared for subsequent analysis.

Instruments

The instruments used for this research are pre-planned interviews designed by my research team as well as the Qualtrics survey. Qualtrics is web based software that allows the user to create surveys, generate reports and share results.("Qualtrics FAQs," n.d.) In the survey, a 5-point Likert scale is used to collect responses from participants. In a scale, participants can choose from a range of numbered options, each representing their level of satisfaction, likelihood, agreement, and other related attributes in response to specific statements or questions. Some questions require open-ended responses, which will be used in the discussion section of this research.

Reliability. Reliability of an instrument is defined as the extent to which the instrument is able to consistently measure the parameters that it is supposed to measure.(Carroll, 2017)

Inter-rater reliability. To assess internal consistency reliability, a set of Likert-scale questions related to different AI statements in terms of personal perceptions are used. These questions measure participants' agreement with these statements. Inter-rater reliability of a survey instrument used to map participants level of perceptions. For example the question 'I find AI scare' is measured with 5 point Likert scale: "Extremely disagree", "Somehow disagree", "Neither agree nor disagree", "Somewhat agree" and "Extremely agree". The Qualtrics software automatically maps these degrees in numbers scaled from 1 to 5. I calculated Fleiss' Kappa which is calculated in Excel. In this calculation, I treated the number of questions as the number of raters. The outcome was 0.5449, indicating an agreement level lower than the standard threshold of 0.60, which is typically considered to be a moderate level of agreement.

Test-retest reliability. To assess the reliability of the survey instrument, we conducted a test-retest study. Students from Data Science & AI were asked to complete the survey in order to be assured that their domain specific questions are included in the survey. With this method we were able to determine test-retest reliability.

Validity. Validity refers to how well an instrument accurately measures what it's intended to measure and performs its function. In the real world, achieving 100% validity is extremely challenging, if not impossible, so we often talk about degrees of validity. The validation process is all about gathering and examining data to check how well the instrument is doing its job.(Biddix, 2018)

Face validity. Before the primary survey was employed the structure and the questions were revised by the teaching staff and students of the Data Science & AI programme. The questions within each domain were organized into distinct sections to allow participants from their respective programs to respond to demographic, domain-specific, and general AI questions. After confirming that the survey was functioning as intended, it was then put into use.

Construct validity. My research team administered a preliminary survey to examine how different the results are from the main survey to assess construct validity. Because both surveys are measuring the same underlying construct, the responses should highly correlate if the construct is well understood. For the example question of 'Does AI have a positive impact' there is a high and statistically significant positive correlation between the corresponding variables in the two datasets suggests good construct validity. It means that the items in both surveys are measuring the same underlying construct.

Results

Descriptive Statistics

For the first hypothesis, my aim was to assess whether a meaningful difference exists between two groups: one individuals who use AI in their study field, and the other consisting of those who intent to incorporate AI in their domain - facility management

programme. The objective was to determine if there is a statistical significance.H_0:$(\mu_1 = \mu_2)$. To investigate this hypothesis I used a Welch Two-sample t-test.

T-test

Welch's t-test, also known as the unequal variances t-test, is a two-sample location test in statistics that is used to examine the (H_0) hypothesis that the means of two populations are equal. It is a version of the Student's t-test, named for its developer, Bernard Lewis Welch, and is more trustworthy when the two samples have uneven variances and perhaps different sample sizes.(Ruxton, 2006)Derrick and White, 2016)

The t-score represents a ratio between the disparity among two groups and the variation within those groups, which is quantified by the standard error. In my case, t-score is -41.037, which is quite far from zero, suggesting substantial difference between the means of the two groups.

The p-value 2.2×10^{-16} is extremely smaller than the significant level (0.05) indicating a highly significant result.

The 95% confidence interval (CI) serves as a range of two critical t-scores. It can be concluded that if the computed t-statistics extend beyond these boundaries, there is a strong evidence to reject the null hypothesis (which would suggest no group differences $H_0 : \mu_A = \mu_B$) in favor of the alternative hypothesis (which would suggest that there is a difference in the means between the two groups $H_a : \mu_A \neq \mu_B$.) The 95% confidence interval for the difference between the means does not contain zero. It is from -14.901 to -13.498. Since the confidence interval doesn't include zero, this further supports the conclusion of a significant difference.

The Welch Two Sample t-test results show a highly significant difference in means between individuals who already use AI in their domain and those who intend to incorporate AI into their domain and this difference is not due to random chance.

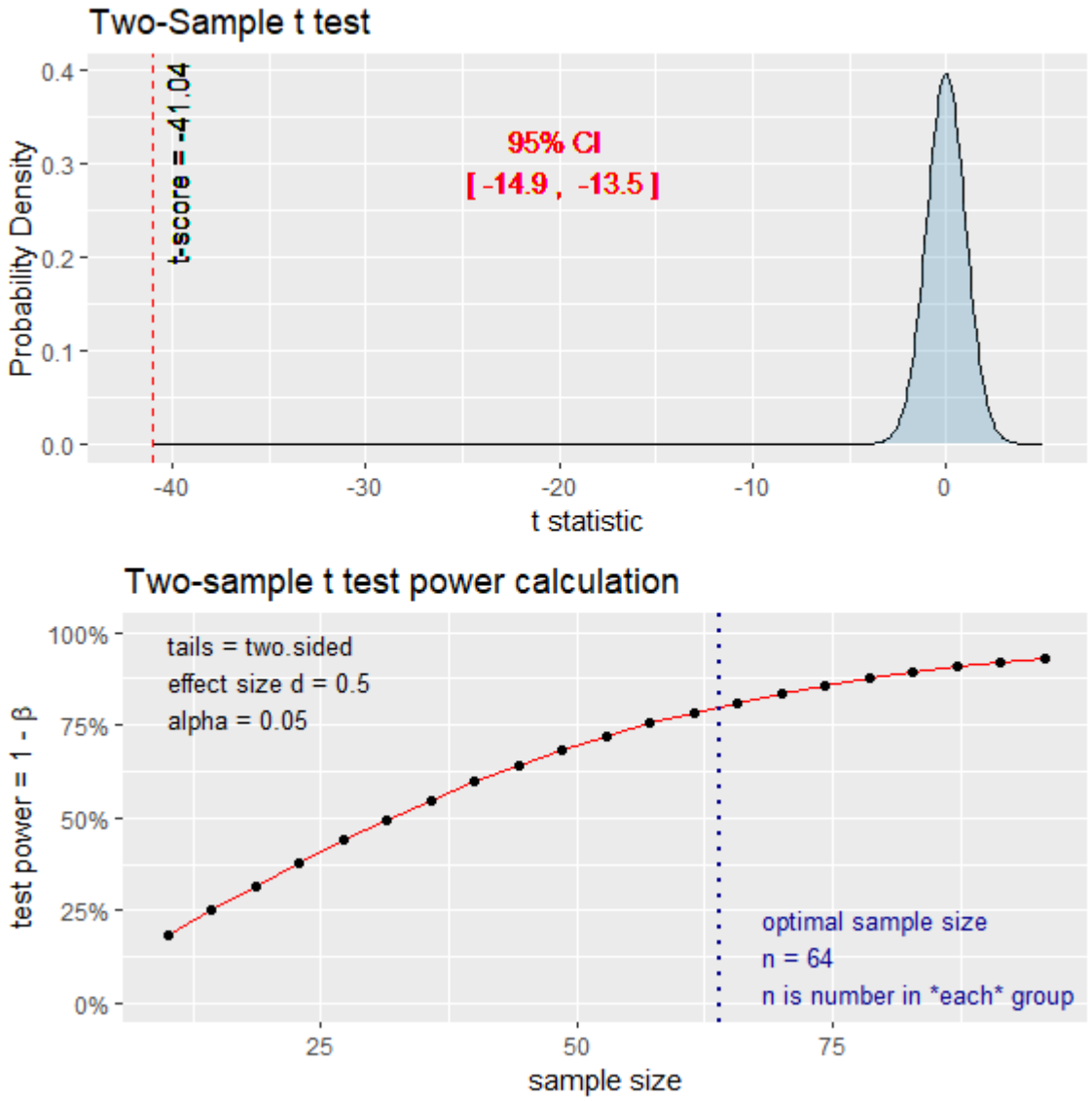

Figure 2

Two-Sample T-test distribution

Power Analysis

How many participants are needed to detect a significant effect? To calculate the required sample for this study I conducted a power analysis. Power analysis helps assess the probability of correctly rejecting the null hypothesis when there is indeed a true effect. With the given sample of 20 in each group, a significance level of 0.05, and a moderate effect size of 0.5, the hypothetical two-sample t-test has a statistical power of approximately 33.79%. To achieve the desired statistical power of 80% the sample size should be 64 for each group.

Inferential Statistics

My goal in addressing the third research question was to identify possible factors impacting the intent to incorporate AI in all domains. I wanted to explore how the facility domain compares to all the others. However, it is important to note that drawing conclusive comparisons could be challenging due to the significant differences in the sample sizes, which makes it difficult for me to make assumptions. For this matter I used linear and multiple linear regression.

Linear regression is a statistical method used to model the relationship between a dependent variable and one independent variable. It aims to establish a linear relationship between these variables and can be used for both prediction and understanding the nature of the relationship. In contrast, multiple regression is an extension of simple linear regression but it is used to model the relationship between one dependent variable and two or more independent variables. The primary purpose is to understand how the dependent variable changes as the independent variables change.(Singh, 2023)

Multi linear regression analysis

To achieve this, a multi-linear regression model was trained. I carefully examined the plethora of variables to identify those that had an significant impact on the dependent variable using backward model selection method. Therefore, I monitored the changes in the R-squared score as this helped determine two significant predictors. The intent to

incorporate AI can be predicted based on participants' accumulated experience in their respective domain and their familiarity with AI concepts.

To ensure that the model I built makes accurate predictions, I employed several diagnostic plots, including the Residuals vs. Fitted plot, Normal Q-Q plot, and Scale-Location plot. These plots were used to examine whether the assumptions of the multiple linear regression model, such as linearity, independence of errors, homoscedasticity, and normality of residuals, are met. These assumptions are essential as they contribute to the robustness and reliability of the multiple linear regression analysis.

In the residuals vs. fitted values plot helps examine the linearity and independence of errors as well as identify patterns or trends in the residuals. Usually residuals should be scattered randomly around the zero if the linearity assumption is met. Unfortunately, the spread of residuals is not fully consistent as there is a pattern that can be seen. This means that heteroscedasticity, which violates the assumption of constant variance, is not fully met.

The Normal Q-Q plot zero line represents the line where the residuals would be zero for all observations if the model was perfect. As it can be seen most of the residuals are scatter close to this line O. It can be concluded that the residuals are approximately normally distributed

The Scale-Loc (spread-location) plot helps identify whether the spread of residuals remains relatively constant as the predicted values increase. It shows the square root of the absolute standardized residuals (y-axis) against the fitted values (x-axis). The flat and consistent spread in the scale-location plot indicates that the assumption of homoscedasticity is met.

Linear regression analysis

After identifying the most significant predictors I compared both of them using Linear regression in order to determine which gives better accuracy. As a result I found that the participants' accumulated experience has an R-squared score of 0.09893 whereas their familiarity with AI concepts has a R-squared score of 0.1547.

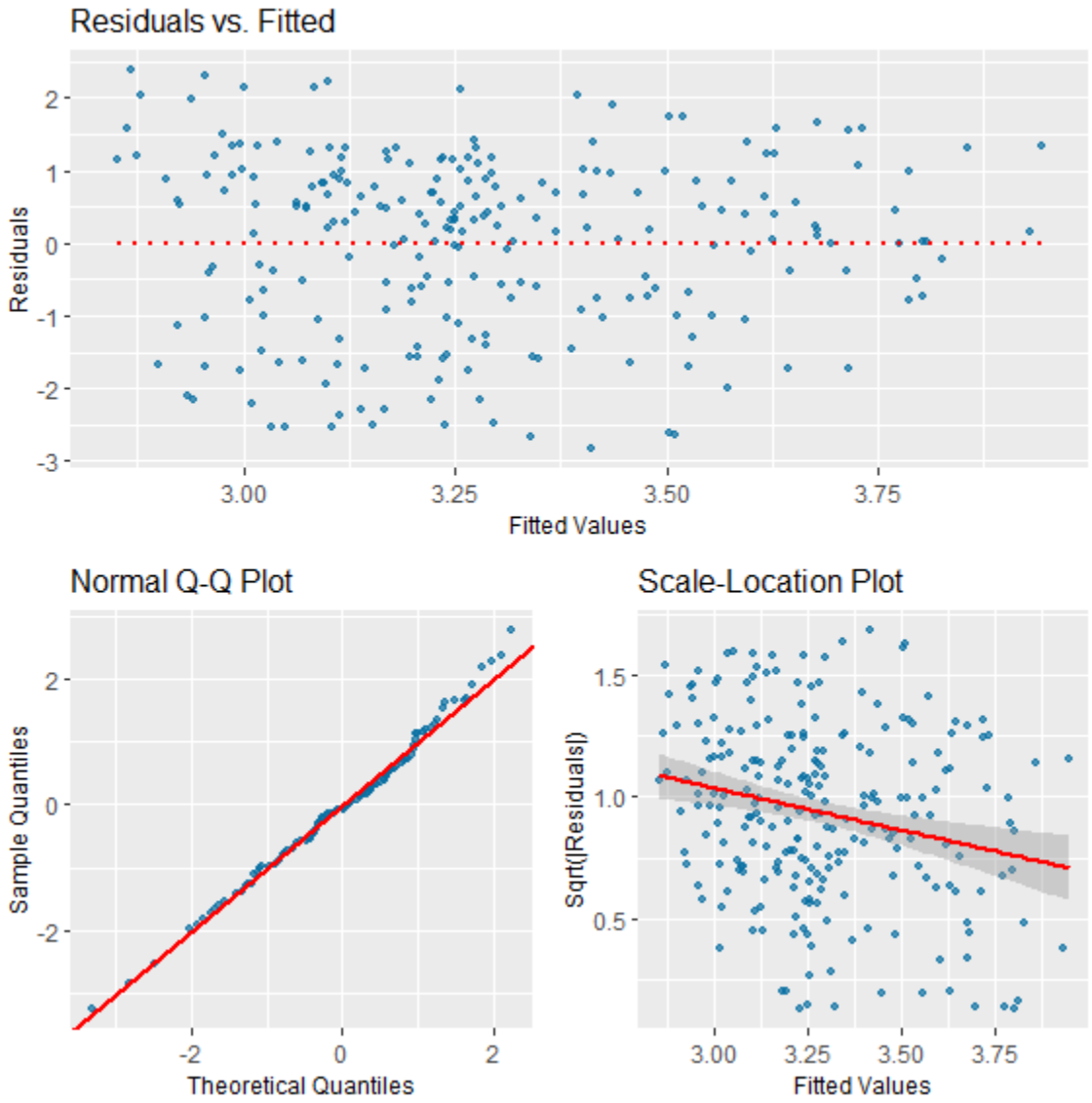

Figure 3

Diagnostic plots for multiple linear regression

I then trained a linear regression model using the second significant predictor from the multiple linear regression model. The coefficient for this predictor was estimated to be 0.4427, and the associated p-value for this coefficient was 0.0862. However, this p-value is not strong evidence to reject the second null hypothesis (H_0), which is if familiarity with AI concepts has no correlation with the intention to use it in the facility domain ($\beta_1 = 0$).

Figure 4, shows a scatter plot that includes data points from all participants, with a specific focus on those highlighted as representatives of the facility domain. It's worth mentioning that I purposefully added noise to the variables before training the model. This was done to bring out the whole range of data points, particularly to show the level of linear correlation present in the dataset.

The residuals are denoted by the red lines in the scatter plot, and these lines serve as visual indicators of the differences between the actual values and the predicted values. This part of the analysis is important for evaluating the model's performance and understanding how well it captures the underlying patterns in the data.

Discussion

Quantitative

The survey included a population of respondents, with 530 people taking part. The facility domain was represented by 50 people in this category. Figure 1 represents the bar chart of this population distribution.

The scatter plot in Figure 4 shows the relationship between individuals' intent to use AI and their level of familiarity with AI within the facility domain. The graph clearly shows a positive correlation between the actual and predicted values. This observation leads to the conclusion that as people's knowledge of AI grows, so does their intent to use it in the domain.

Figure 5 reveals that the majority of the population consists of students. These individuals expressed their self-assessment of their knowledge of AI, and it is notable that most of them describe their knowledge as neither good nor bad. This may be attributed to

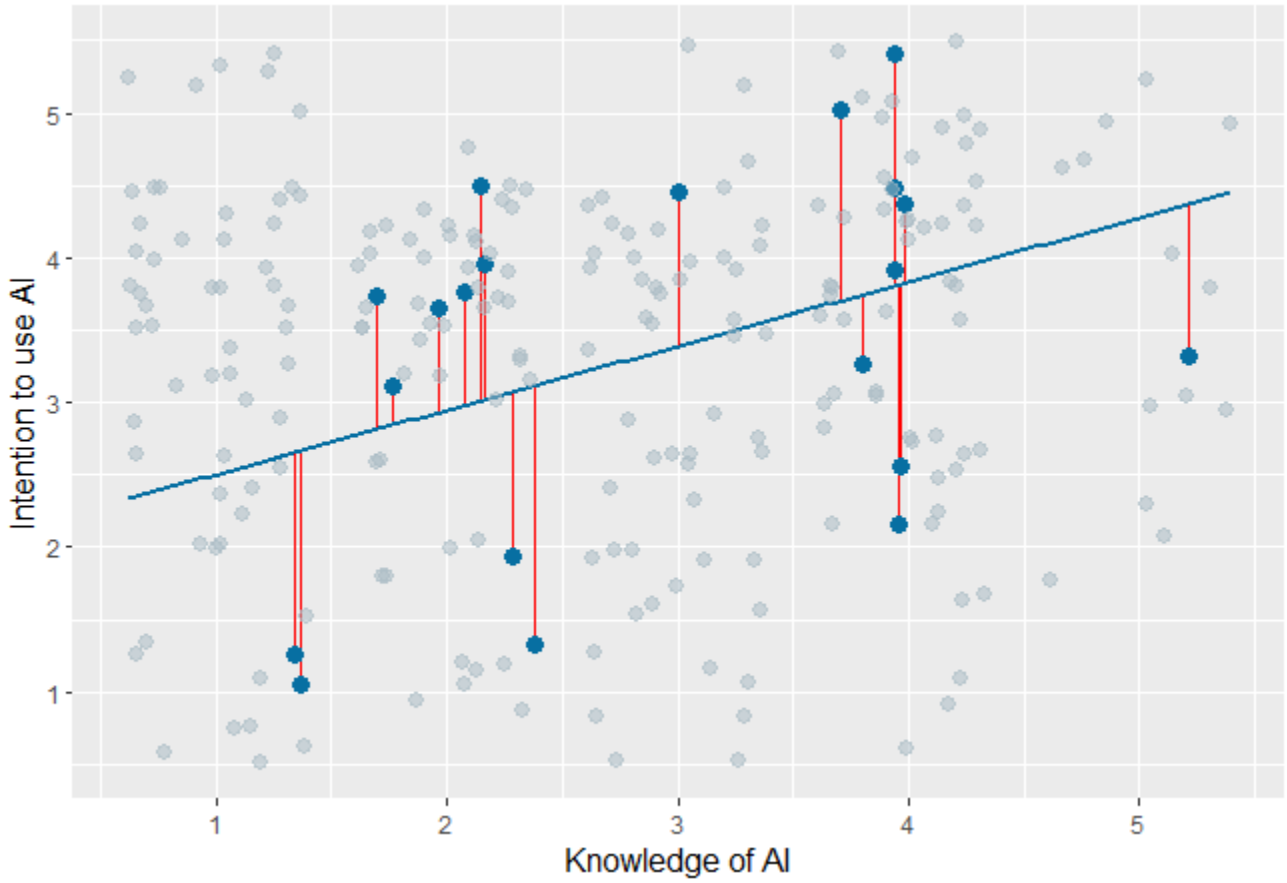

Figure 4

Scatter plot: Knowledge about AI concepts vs Intention to use AI

the fact that they might not have had extensive exposure to AI concepts in their educational or professional experiences. Historically, facility management has been focused on the maintenance of physical infrastructure. AI, on the other hand, is a relatively new development. As a result, persons in this field may not have had many opportunities to incorporate AI significantly into their practices. This historical context could be a significant factor contributing to the lack of individuals defining their knowledge as extremely good.

When it comes to experience, individuals with less experience in the facility domain have better knowledge of AI than those with more experience. The reason for this could be that less experienced individuals may have had the opportunity to learn about AI in more

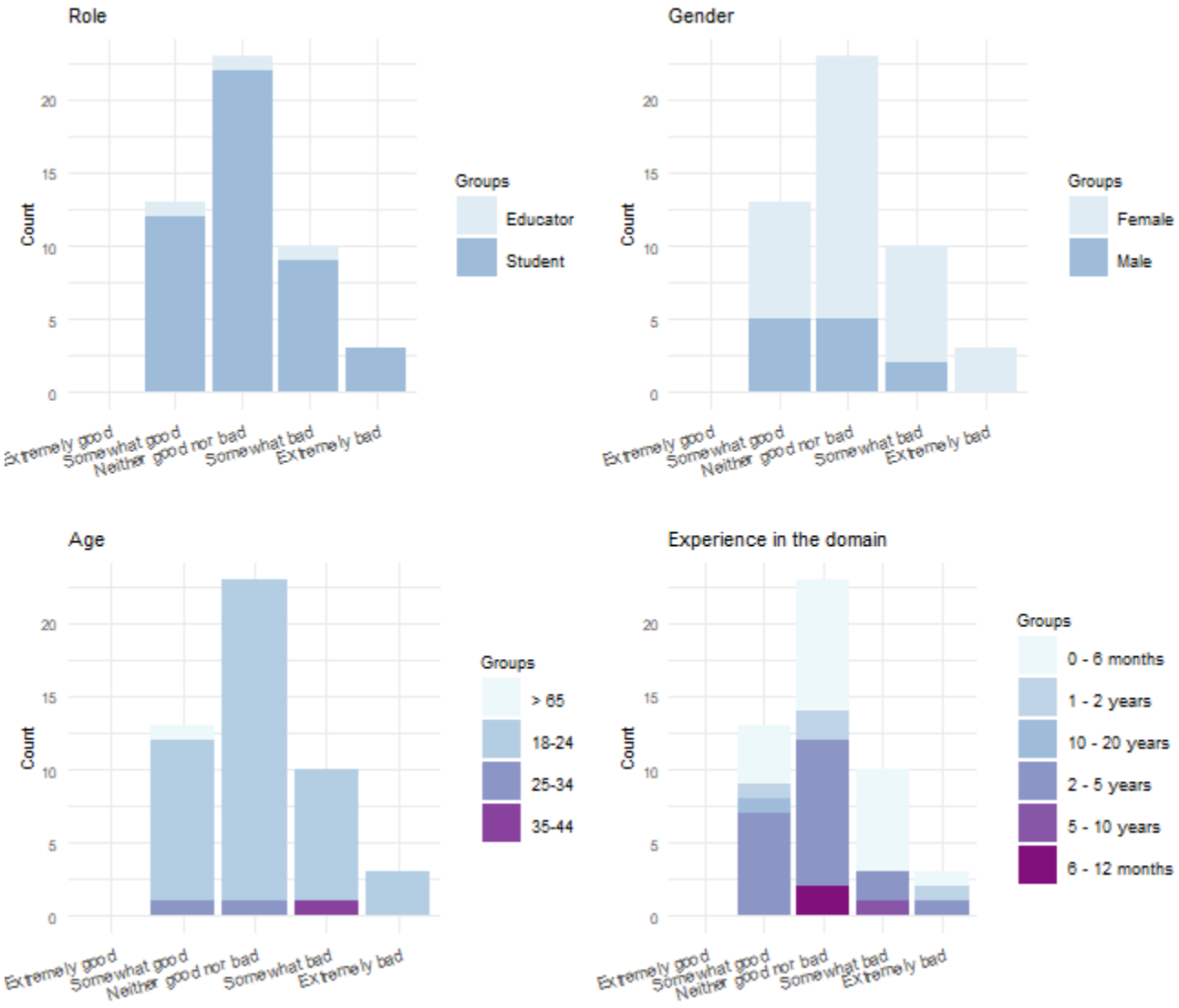

Figure 5

AI knowledge across different demographics in facility domain

recent educational or training programs.

Individuals between the ages of 25 and 34, for example, have more knowledge of AI than those between the ages of 35 and 44. This could be related to the fact that younger generations have had more opportunities to learn about AI concepts and technology from an early age, whether in school or through online courses and resources. However, it is important to note that this is not consistently true, since people above the age of 65 possess a more knowledge of AI than those between the ages of 35 and 44. Therefore, based on these observations, it can be concluded that age alone does not play a significant role in determining individuals' knowledge of AI.

Figure 6 shows the level to which individuals have previous experience with AI in the domain. The data show that the majority of individuals have used AI before, however there are others who have never used AI before. Surprisingly, both individuals over the age of 65 and those between the ages of 25 and 34 had previously used AI. This confirms the assumption that age alone does not have an important influence on people's prior exposure with AI..

Figure 7 showcases individuals' intentions to incorporate AI into their learning activities. It is evident that individuals generally exhibit a positive attitude toward using AI for their learning activities, although there are some who would choose not to do so. In contrast to Figure 5, Figure 7 reveals that individuals with more experience express a greater confidence in their intention to use AI for learning activities compared to those with less experience. This trend may be attributed to the fact that experienced individuals frequently have a better awareness of the importance of continuous learning and personal development.

Qualitative

Both interviewees expressed their overall satisfaction with BUas campus facilities, although their personal experiences led to varying viewpoints. When I asked them about their ideal learning environment, the lecturer emphasized the importance of personal and

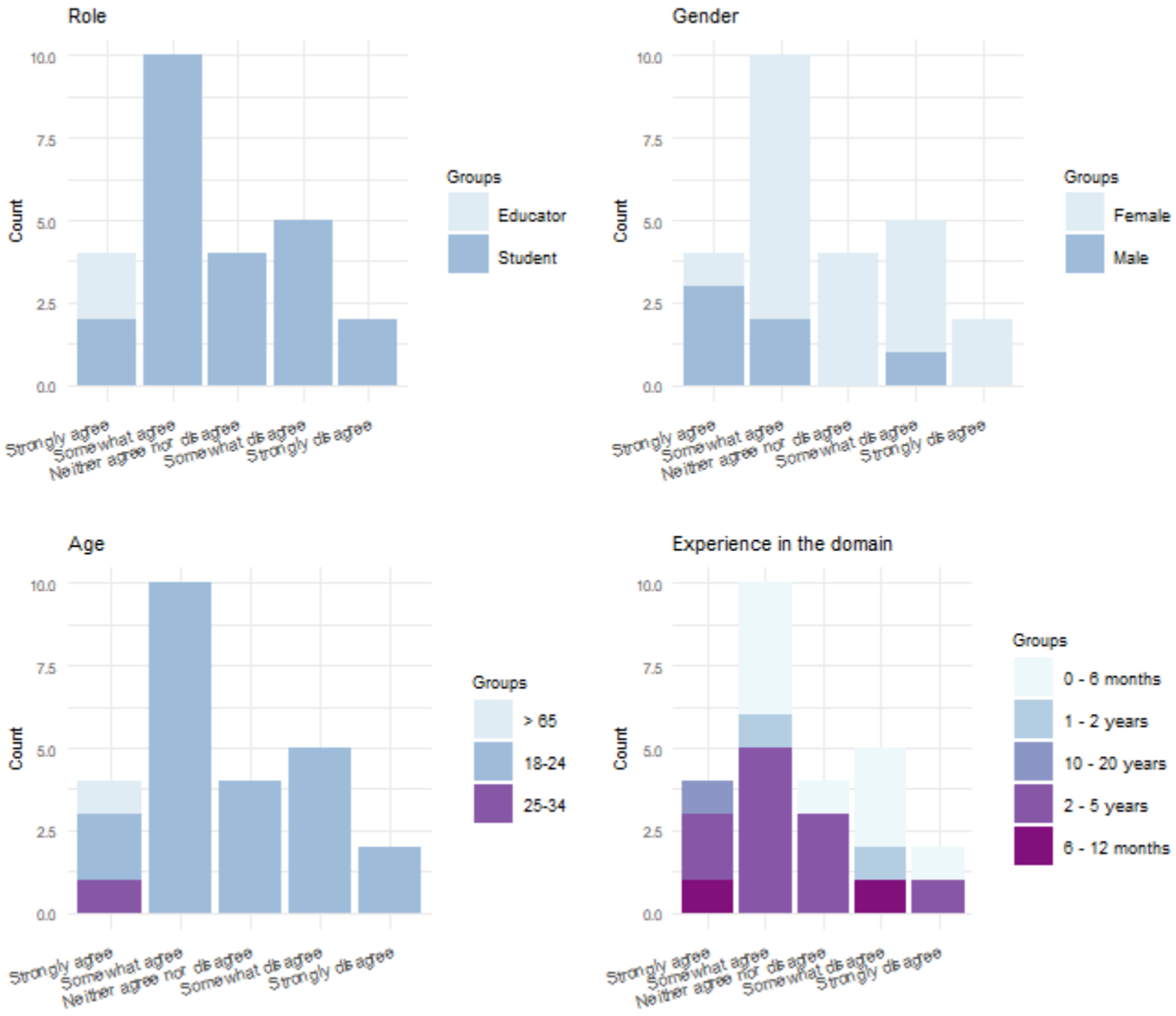

Figure 6

Used AI before across different demographics in facility domain

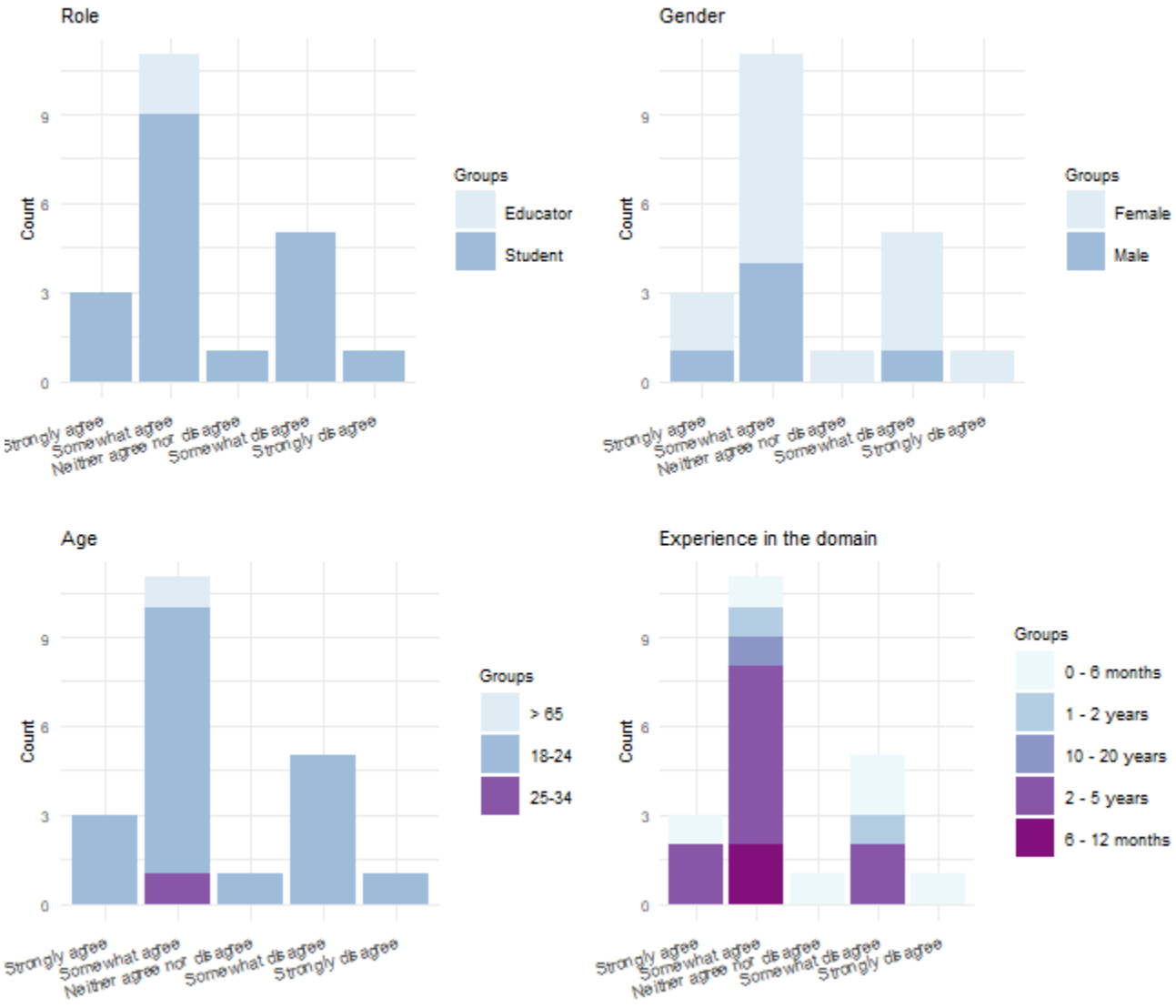

Figure 7

Intention to incorporate AI across different demographics in facility domain

professional development achieved through teamwork, practical experiences, and hands-on activities like programming. In contrast, the student highlighted the need for a balance between teamwork and individual growth.On the positive side, they both held a deep appreciation for the campus's convenience, appealing features, and the accessibility of resources. They found BUas facilities impressive. When questioned about the integration of AI within campus facilities, the student opined that its necessity depended on the context. She provided an example, mentioning the efficiency of AI tools for personal use in isolated areas and AI support for collaborative work. The lecturer, on the other hand, believed that incorporating AI would enhance students' experiences. He illustrated this point with the use of AI and chatbots to assist students in finding information within the library. Addressing challenges and inconveniences, both interviewees brought up concerns related to the service desk. The lecturer advocated for a shift toward a more service-oriented approach that prioritizes assistance over procedural discussions and cost considerations. The student, in contrast, suggested the replacement of human staff with AI tools to reduce lengthy waiting times. Both interviews underscored the significance of investing in AI for campus facilities. The lecturer contended that such investments would enable BUas to maintain a competitive edge and enhance its reputation, potentially shaping the future success of students. The student recommended investments in navigation maps, particularly due to her experiences of finding classroom layouts confusing. When considering the future of BUas, the student expressed a need for improvements in classroom layout and the service desk. The speaker believes that AI would play an increasing part in campus infrastructures. Overall, the interviewees agreed on the benefits of AI incorporation in campus environments and services, focusing on its role in enhancing the overall student experience and operating continuous improvements in technology education.

Implication

The findings of the qualitative and quantitative study can be used to optimize campus facilities by employing AI technologies. This research can help to establish a strategic plan for the incorporation of AI at Breda University of Applied Science. The gathered insights from student expectations may support the university in making informed decisions about investing in AI technology in education and campus operations.

Limitations

Due to the fact that the study was conducted at Breda University of Applied Sciences, its findings cannot be applied to any larger population or academic institution because the study only examined the specific demographic of students and teaching staff from the facility management programme at BUas. A considerable limitation is the sample size, which comes from the fact that the sample size does not include the full population inside the facility management program. While the data collected from the sample group can provide useful insights, it is important to recognize that this portion of the program's population may not fully represent the diverse range of experiences, perspectives, and attitudes that exist within the facility management program. Given the research's reliance on individuals' motivation and honesty in sharing insights, it raises a crucial question about the objectivity and correctness of the results. If participants are less than honest, the degree to which the obtained data matches with objective reality may be at risk of variability. As a result, the honesty of participants in expressing their opinions may influence the eventual validity of the findings.

Recommendations

Based on these research findings Breda University of Applied Sciences can consider updating the facility management curriculum by including more AI- related content in order to introduce students to how to use it for their studies. BUas can follow suit Amsterdam University of Applied Sciences, where the effective establishment of an Applied Artificial Intelligence Expertise Center has been helpful. This center provides resources to

help students from different domains to get the knowledge and skills needed for efficient AI application in their respective areas of study. Introducing such a strategy can improve the educational experience at BUas and prepare students with the confidence to navigate an AI-driven future. In terms of campus facility the university may investigate the use of advanced navigation systems in order to improve the student experience. These navigation systems could serve multiple purposes, primarily aiming to coordinate the arrangement of classrooms and reducing potential delays. By integrating advanced navigation technology within the campus facilities, BUas can offer students a convenient means of locating classrooms and navigating the campus, particularly in more complex buildings like Frontier Building and Ocean Building. This can simplify the daily routines of students by providing them with real-time guidance to their scheduled classes, reducing confusion, and helping them arrive on time. As for the service desk, BUas can consider implementing AI chatbots that operate 24/7 to provide immediate assistance to students.

Conclusion

In conclusion, this research has provided useful insights on perceptions on AI and its incorporation into the facility management as well as campus facilities within BUas. I was able to explore and analyze students and teaching staff knowledge of AI based on their experience with AI by using quantitative and qualitative methodologies and survey and interview instruments.

The main conclusion from this research is that individuals are willing to incorporate AI in their domain. This highlights the importance of updating the curriculum of the study course. Another important discovery is that individuals are satisfied with current campus facilities and the resources it provides. However, as highlighted by one of the interviewees, the statement, "There is always room for improvement," underscores the potential for exploring various AI tools that could be incorporated into campus facilities to improve the overall student experience at campus.

Overall, this research points out the need for continuous learning and adaptation

within the facility management domain. Students and teaching staff regardless of experience level and knowledge, should actively engage with AI technology and seek educational opportunities. As AI grows, recognizing its potential will be important for achieving increased competitiveness in the field of facility management.

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Appendix A

Interviews

Interview with student

How would you define your present experience with BUas campus facilities, particularly in terms of comfort and convenience?

In general, the campus is comfortable, but the layout of the classrooms can be confusing. Some classrooms are in one area, while other facilities, like more open rooms, are in another part, which can be a bit disorienting. I recently visited Innovation Square, which had large computer screens and similar amenities. However, I usually prefer studying in my own building, which has individual study rooms for quiet, independent work. I also appreciate the library for their study needs.

How would you define an ideal learning environment within BUas campus facilities, and what elements do you consider most important?

BUas already offers a wide range of facilities, and in the speaker's opinion, they are quite impressive. They appreciate the accessibility of these facilities for studying. In their view, it's easy to find a suitable place to study on campus, which is highly convenient.

Can you share any specific challenges or inconveniences you've encountered in BUas campus facilities related to comfort, convenience, or accessibility?

Yeah, and it's mostly about my comfort, convenience, and accessibility. I've noticed that at the service desk, there are often long wait times, even when I have simple, quick questions. I've thought that having an online service desk or possibly integrating AI tools could make the service desk more efficient and convenient. I believe it could be improved that way.

Are there any specific areas or zones within BUas campus facilities (e.g., libraries, study rooms, cafeterias) where you believe AI implementation could have the most immediate and positive impact on the student experience?

In my opinion, it doesn't require some sort of AI integration. I believe that comprehensive AI technologies may not be necessary. It could differ depending on your point of view. For example, in isolated areas where I wish to focus on my own job, I can use my personal AI tools. However, where collaborative work is encouraged, AI has the potential to improve the collaboration process.

Are there any specific facility-related tasks or procedures that you feel AI deployment could simplify or make more convenient?

For example, among other things, I'm considering factors such as space optimization, possible approaches to reduce maintenance concerns, and improving energy efficiency.

How important is it for BUas to continually invest in campus facilities for the benefit of students?

I believe AI will help guide the future and drive innovation. While important, I wouldn't say it's the most important component. It matters to keep innovating and introducing students to technology along with concepts.

Have you faced any personal challenges or inconveniences within BUas campus facilities that you believe AI could help address?

I believe I'm not alone in finding the classroom arrangements a bit inconvenient. They don't always seem very logical. So, I'm hopeful that improvements will be made in the future, perhaps by integrating AI to make it more convenient, especially for new students. Regarding the service desk, reducing wait times is crucial. Implementing chatbots or similar AI solutions could significantly cut down on the time spent waiting for assistance. This is a key area where AI could have a substantial impact.

Interview with lecturer

How would you define your present experience with BUas campus facilities, particularly in terms of comfort and convenience?

I'm quite satisfied, to be honest. I realize that things could be worse, but there's also room for improvement. My perspective and personal experiences play a role in how I perceive it. There's definitely room for enhancement. On the positive side, the facilities are beautiful, and the new screens are impressive. It's essential to remember that these developments often happen with limited budgets. In my opinion, BUas has done a great job with the buildings, making them not only visually appealing but also very convenient. I also appreciate the concept of the campus ID, which facilitates interaction between different academies.

How would you define an ideal learning environment within BUas campus facilities, and what elements do you consider most important?

Yeah, Production Labs, I think that's the discussion we're getting into. I believe that this approach represents the future and is all about focusing on personal and professional development while working in teams. This mirrors the reality of working life later on. Gaining this experience during your studies allows you to understand both the positive and negative aspects of it, which is crucial for learning. Learning often happens through practical experience, and sometimes, you learn the most from your mistakes. I find programming to be particularly exciting, as it's very hands-on. When you start writing code and make mistakes, you gradually improve and learn from them. If you encounter challenges and are unable to articulate your thoughts or problems, it's important to proceed with caution.

Can you share any specific challenges or inconveniences you've encountered in BUas campus facilities related to comfort, convenience, or accessibility?

No, not really. When it comes to the service desk, I don't particularly care about the rules and procedures. What I want is assistance. If my computer is malfunctioning, I simply want a replacement. I'm not interested in hearing about the procedures or cost implications. I'd be willing to allocate additional funds to keep spare PCs on hand in case of hardware failures. Additionally, having a dedicated janitor available throughout the day to address issues with classroom equipment could be beneficial. I understand that these procedures are in place due to budget constraints, which is understandable.

Are there any specific areas or zones within BUas campus facilities (e.g., libraries, study rooms, cafeterias) where you believe AI implementation could have the most immediate and positive impact on the student experience?

When I first started 18 years ago, it was mainly about books and journals. Nowadays, the average student borrows just one or two books a year, which is fine because databases and other digital resources have become more accessible. Up until now, the library staff has been incredibly helpful in guiding students to find information, knowing where to look, and suggesting the right keywords. However, these roles could potentially be taken over by chatbots and AI.

Are there any specific facility-related tasks or procedures that you feel AI deployment could simplify or make more convenient?

Indeed, the Facility Management Information System can greatly simplify several areas, such as connectivity and process automation. This approach does away with the requirement for a middleman to translate data into immediate action. For example, if an elevator frequently breaks down, the system should immediately send a repair request to the company. It should not be dependent on someone constantly monitoring the situation.

How important is it for BUas to continually invest in campus facilities for the benefit of students?

It is not simply a talent competition, but also a contest between educational institutions. Everyone, whether in sustainability or AI, seeks to succeed and be acknowledged as the best. This ambition for perfectionism is also influenced by frequently discussed rankings. The reputation of your university can shape your future. As you noted, MIT is frequently regarded as the greatest. While there is no clear evidence, they have worked hard to develop that reputation, and sustaining it is a continuous effort.

Have you faced any personal challenges or inconveniences within BUas campus facilities that you believe AI could help address?

I think waiting lines in catering could be improved. They should already know my lunch order, and as soon as I arrive on the premises, it should be ready, like my tea, sandwich, milk, and soup.

Finally, considering AI's potential transformational role, how do you see the future of BUas campus facilities and the student experience changing in the next years?

I believe that AI will see increasing use. However, I don't think it will significantly alter the facility department because everything is already measured; it's just done manually at present. While having an overview is nice, it won't make a substantial difference since it remains a labor-intensive process. AI can't replace certain physical tasks like painting windows. The major change, in my opinion, will be in the educational system. As I mentioned earlier, there's still a need for teachers, but AI can make the educational process more efficient.

Appendix B

Survey data

What is your role?

What gender do you identify as?

To which age group do you belong?

What is your domain?

Which year(s) are you currently studying/teaching?

How long have you been working and/or studying in your domain?

How would you rate your current knowledge about AI?

I am familiar with Machine Learning and Deep Learning technologies

I am aware of AI being used in my domain

I have taken courses related to AI in my programme

Are you aware that many everyday devices and applications already use AI?

I have used AI in my domain before

There are many beneficial applications of AI

AI systems can replace humans in repetitive tasks

AI systems can augment/assist humans in creative tasks

I think AI will be a great asset to many businesses in my domain

The increase of AI usage threatens job security in my domain

I find AI scary

I am concerned about AI applications mining my personal data

I intend to use AI to automate repetitive tasks

I intend to use AI to assist me with creative tasks

I intend to use AI in my learning activities