Predicting the behavior intention of intelligent office software

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Abstract. In an era where artificial intelligence (AI) is becoming increasingly accessible to the general public, various AI-integrated products have emerged. Microsoft 365 Copilot, developed through collaboration between Microsoft and Chat-GPT, represents a new generation of intelligent office software that combines AI with productivity tools. This research aimed to explore whether intelligent office software will become a future trend in the field of office productivity. The study expanded the application of the Technology Acceptance Model (TAM) to the domain of intelligent software and utilized the SWOT analysis method. The findings of this paper indicated that the design of Microsoft 365 Copilot could enhance Perceived ease of use (PU) and Perceived usefulness (PEOU). The improvement in these factors promoted users' positive attitudes and behaviors towards the product, thus suggesting that intelligent office software aligns with future development trends. This study provided empirical evidence for the TAM theory in the context of intelligent office software and offers recommendations for the future development of Microsoft 365 Copilot based on the SWOT analysis.

1 Introduction

1.1 Research background

Office software has become an indispensable instrument for people's daily work and study due to the widespread adoption of computers. According to LP Information's (LPI) market strategy report titled "Global Office Software Growth Trends 2023-2029," the size of the global office software market attained an impressive $49,870 million in 2022 [1]. In addition, as of 2023, internet technology has substantially advanced and AI technology has matured, resulting in an increase in the number of mainstream AI products and AI-integrated offerings.

Against this backdrop, Microsoft has established a dominant position in the office software industry, with Enlyft's research data indicating that Office365 holds a 54% market share in the office productivity product market [2]. In March 2023, Microsoft launched an innovative intelligent office software called Microsoft 365 Copilot by combining AI technology with office software. The key differentiating factor of this new product is that this software can autonomously assist users in generating documents, recording meetings, and summarizing conferences by analyzing user instructions through AI technology.

Currently, there have been several research studies focusing on Microsoft Office software and AI. For instance, Niglas conducted research on the usability of Spreadsheet software in Mixed Methods Research, using Microsoft Excel as the object of study [3]. Vasile explored the role of artificial intelligence in English academic papers, with Chat-GPT as the research subject [4]. Fitria studied the role of artificial intelligence in English academic papers, with Chat-GPT as the research subject [5].

1.2 Research gap

Numerous research papers have been published on Microsoft software and artificial intelligence. However, with the rise in popularity of artificial intelligence, an increasing number of products that integrate artificial intelligence with software have emerged. Innovative as they are, these new intelligent software solutions lack sufficient research on their viability and projections for their future development. This innovative intelligent software, which is on the cutting edge, lacks exhaustive studies on its applicability and future growth prospects. The introduction of intelligent office software, led by Microsoft 365 Copilot, has generated considerable discussion and interest. However, these discussions have primarily centered on the software's functionality, and there has been a dearth of exhaustive, scientifically based macro-level analysis and research on the future development trends of intelligent office software products.

Consequently, this paper aims to explore whether intelligent office software represents the future development trend. Taking Microsoft 365 Copilot as a case study, this research will analyze the strengths and weaknesses of intelligent office software based on theoretical analysis and make predictions about its future trajectory. Is the Future Trend Towards Intelligent Office Software? The motivation of this paper is the findings of this study will serve as a reference for the office software users, focusing on Microsoft Office [4].
industry and the AI sector in shaping future development prospects.

1.3 Structure of the paper

In the following sections, this paper will review the relationships among the key elements of the Technology Acceptance Model (TAM), namely PU, PEOU, attitude, and behavioral intention. This analysis will be conducted using Microsoft's intelligent office software, Microsoft 365 Copilot, as a case study and validated through a qualitative approach using the SWOT (Strengths, Weaknesses, Opportunities, and Threats) method. Finally, based on this examination, conclusions regarding the future development trends of intelligent office software will be drawn, employing the framework of the TAM theory.

2 Literature review

2.1. Definition

The TAM is a model proposed by Davis in 1989 to study user acceptance of information systems [6]. It is founded on the theory of reasoned action. Initially, the TAM intended to provide an explanatory framework for the factors that influence the pervasive adoption of computers [6]. Over time, the scope of this theory has expanded to include research fields such as information systems, information science, library science, and business management [7].

According to the TAM, the degree of user acceptance of a new information system is determined by two primary factors: its PU and its PEOU. PU refers to the extent to which users conclude that using the system will enhance their job performance, while PEOU reflects users' perception of the system's ease of use [6]. Both PU and PEOU, in turn, influence attitude toward using and behavioral intention. Attitude toward using represents users' attitude toward using the system, while behavioral intention refers to users' intention to use the system [6].

2.2 Important results

In the Technology Acceptance Model, the interaction among PEOU, PU, Attitude, and Behavioural Intention determines users' usage of the system. The model posits that system usage is determined by Behavioural Intention, which is influenced by Attitude toward using and PU. Attitude toward using, in turn, is influenced by PU and PEOU. PU is influenced by PEOU and external variables. PEOU is determined by external variables.

A considerable amount of research has been conducted to explore the relationships among PEOU, PU, Attitude, and Behavioral Intention.

There is a strong positive correlation between PU and Attitude. This means that the more users perceive a product to be useful for their work, productivity, and daily life, the more positive their attitude towards that product becomes. This relationship has been evidenced by Norazah and Norbayah in their study on the acceptance of 3G mobile services using the TAM framework [8]. When users perceive that 3G can provide convenience in their lives, they are more inclined to use it [8]. Similarly, Nadim and Noorjahan arrived at the same conclusion in their investigation of customer adaptation to electronic banking [9]. When participants perceive the online banking system as convenient to use, they have a more positive attitude towards it [9].

Most of the researchers have demonstrated that there is a positive correlation between PEOU and Attitude toward using. This means that when users perceive a product to have a lower usability barrier, their attitude towards that product becomes more positive. This conclusion was confirmed by Kanokwan and others, when they studied on the Intention to Use E-Marketing [10]. The same conclusion was also reached in the research conducted by Tjuk and Hapzi, in their case study in Ikens Wholesale Trade, Jakarta - Indonesia [11]. When users perceive that these products can enhance their life efficiency, they have a positive attitude towards these products [10, 11].

PEOU and Behavior/Purchase Intention could also show a positive relation in most of the research. Rizky et al. found in their study on user behavior of the Bukalapak application in Samarinda that PEOU has a promote on purchase intention, but it does not have a positive effect on use behavior [12]. The same conclusion is evident in the research conducted by Liu and Chen on users' intention to purchase Electronic Services [13].

PU and Behavior/Purchase Intention exhibit a robust positive correlation. Zhang's study on online travel agencies in China revealed that as users perceive a product to be more useful, their willingness to purchase the product and avail its services increases significantly [14]. This finding is further supported by Renzo and Wurong's research on users' intention to purchase Bitcoin, where they highlight the significant impact of PU on users' actual purchase behavior [15]. These studies underscore the importance of users' perception of a product's utility in driving their behavioral intentions and purchase decisions.

2.3 Summary

Based on the aforementioned studies, it is evident that users' attitudes are influenced by both PU and PEOU, and both factors have a positive impact. Among them, PU has a more significant influence on users' attitudes. Similarly, users' behaviour and purchase intentions are also influenced by both PU and PEOU, with PU exhibiting a strong positive correlation with purchase intentions. These factors interact with each other, ultimately resulting in users' product usage behaviour.

Although the impact of external variables on PU and PEOU may vary and individual differences may lead to specific scenarios in attitudes towards use, these scenarios are relatively rare, and the above conclusions can still generalize the majority of user purchase
behaviour. Furthermore, despite the significant technological advancements and changes in the scope of products over time, users' perceptions are also updated in line with the development of the era. Therefore, the updated products and users' cognition are within the same framework of standards. Hence, the TAM theory remains applicable for analysing intelligent office software, and its underlying logic and relevant relationships hold true for analysing Microsoft 365 Copilot.

3 Method

3.1 Research design

This study will employ a qualitative analysis approach to conduct a SWOT analysis of Microsoft 365 Copilot. Qualitative analysis is a research method in which researchers gather research data through methods such as historical reviews, literature analysis, interviews, observations, and experiential participation [16]. Then, after analyzing the data using non-quantitative means, researchers can draw research conclusions [16].

SWOT analysis (Strengths, Weaknesses, Opportunities, and Threats) is a business strategy tool used to evaluate the comparative situation of an organization with its competitors [17]. Edward utilized SWOT analysis to assess Micro, Small-to-Medium, and Large Software Enterprises in Austria [18]. Similarly, Bernhard also employed SWOT analysis in his article The Physics of Software Tools [19]. Based on the aforementioned research, using SWOT analysis as a means to analyze software companies is reasonable. Therefore, considering the previous studies, conducting a qualitative SWOT analysis of Microsoft 365 Copilot as a new software is both reasonable and justified.

3.2 Microsoft 365 copilot

Microsoft Corporation is a renowned American technology company with a global presence. It specializes in the development, manufacturing, and distribution of a diverse portfolio of software, hardware, services, and consumer electronics, catering to both individual consumers and enterprise customers [20]. Microsoft dominates its industry and has consistently experienced stable revenue growth on a global scale. For instance, in 2022, Microsoft reached a historic milestone with revenues reaching $198 billion [20]. In 2022, Microsoft ranked third in Forbes' Global 2000 list of the world's most valuable brands, and in 2023, it secured the ninth position in Forbes' Global 2000 list of the world's largest companies [21].

Microsoft 365 Copilot is a collection of tool assistants that combine Microsoft 365 and large language models (LLMs) [22]. Copilot can assist users in generating initial drafts of articles based on supplied keywords or topics by leveraging AI capabilities and integrating with Word [22]. Copilot can also expand, revise, and polish user documents based on their particular requirements and preferred tone [22]. Through its integration with Excel, Copilot can automatically assist users with table creation and data analysis [22]. Copilot can generate relevant data tables and calculations by analyzing user queries [22]. Users only need to pose inquiries to Copilot. When combined with PowerPoint, Copilot enables users to convert written documents directly into presentations, and it can modify the document's format and content based on user preferences [22]. In addition, the integration of Copilot with Outlook helps users organize emails and generate email responses based on user prompts [22]. The integration with Microsoft Teams enables users to summarize meeting topics and key points, record meetings, and respond to questions about meeting content [22].

3.3 SWOT analysis

3.3.1 Strength

Microsoft 365 Copilot provides apparent usability benefits. Its integration with vast language models enables it to effectively process language commands. Users can easily invoke the Copilot functionality and input commands without requiring extensive training, so the learning curve is minimal. These characteristic increases PEOU.

Additionally, the integration of AI in productivity software significantly enhances users’ daily work efficiency. According to Microsoft's research, 62% of respondents reported spending too much time searching for information on workdays, while 57% of regular employees devoted their time to communication (in meetings, emails, and chats), and 43% of their time was spent on creation (in documents, spreadsheets, and presentations) [23]. Cumbersome communication processes and repetitive tasks lower the productivity of these respondents, limiting their ability to engage in more creative work. AI can assist users in handling these mundane tasks, thereby saving significant time. A survey on the use of GitHub Copilot, an AI-powered software assistant, revealed that teams using the intelligent software completed tasks at a rate of 78%, compared to 70% for teams that did not use it [24]. Furthermore, 88% of respondents reported increased work efficiency, 77% indicated that the tool helped reduce time spent searching for information, and 74% stated that they could focus their energy on more critical areas [22]. These features have a positive impact on consumers in terms of enhancing PEOU and PU. Notably, 82% of leaders expressed their desire to hire employees with AI experience [23].

3.3.2 Weakness

Copilot has several common AI weaknesses. The first one is accuracy. While the technology behind LLMs is becoming more advanced, there are still errors in language processing. In a study comparing GitHub Copilot's applications with those of programmers,
Arghavan and Vahid found that Copilot provided simpler solutions to programming tasks compared to the participants, but in certain cases, Copilot ignored programming requirements and used functions that were explicitly stated to be avoided in the description [25]. In some instances, intelligent software may not have the same level of syntactic accuracy as humans, and deviations in language processing by AI can lead to errors in work, thus impacting PU (PU) and causing negative effects on consumers.

The second limitation is the repetitiveness of the solutions provided by Copilot. While Copilot can offer more correct solutions compared to programmer-submitted ones, the diversity of solutions submitted by programmers, whether correct or incorrect, is higher than that of Copilot's [25]. Therefore, for consumers dealing with highly innovative tasks, the current performance of Copilot may not fully meet their needs. This can lower PU and have a negative impact on consumers.

The third limitation is related to security and privacy concerns. The integration of Microsoft 365 Copilot into office software means that users' work data or privacy concerns. The integration of Microsoft 365 Copilot into office software, considering how to disable AI in intelligent office software would reduce the PEOU of the software. This can have a negative impact on consumers.

### 3.3.3 Opportunity

Microsoft 365 Copilot operates in an industry with numerous opportunities. Firstly, the office software industry encompasses a wide variety of software with various features and categories. In addition to common office software such as documents, presentations, spreadsheets, emails, and meeting tools, there is also office software related to programming, modeling, and images. Microsoft can expand its portfolio of office software by integrating LLMs with these types of software. Expanding the categories and scope of office software will increase its user base and the PEOU of the intelligent Microsoft 365 Copilot series of office software.

Secondly, within the AI industry, there are not only LLMs but also AI models specialized in graphics processing and modeling. Microsoft can explore incorporating new AI models into its suite of intelligent office software. This way, Microsoft's intelligent office software will not only be capable of processing language but also handling images or sound. This will enhance the PU of Microsoft 365 Copilot.

Microsoft may also contemplate developing products that integrate Microsoft 365 Copilot with other smart devices, in addition to computer platforms. Microsoft 365 Copilot's PEOU will be enhanced by extending the product's applicability to additional platforms, such as mobile devices.

These opportunities will further expand the market by enhancing PEOU, thereby increasing consumers' willingness to use and purchase.

### 3.3.4 Threaten

There are currently some threats to Microsoft 365 Copilot on the market. The primary threat comes from similar competitors. Since the release of Microsoft 365 Copilot, numerous similar office software programs have emerged, such as Baidu's self-developed intelligent document processing software called Wenxin Yiyan. Similar products could potentially reduce consumer stickiness toward Microsoft 365 Copilot. However, due to the leading position of Microsoft's language processing models in the industry, the language processing capabilities of competitors are inferior to those of Microsoft 365 Copilot. Additionally, although there are competing products that combine office software with AI, Microsoft still holds a dominant position in the intelligent office software industry due to the large user base of Word, PowerPoint, Excel, and other foundational applications. Overall, the threat from competitors to Microsoft 365 Copilot is relatively low, resulting in weaker bargaining power for consumers.

Another threat that Microsoft 365 Copilot faces is consumer concern about AI. Tony mentioned in his article that consumers have concerns about privacy [26]. Furthermore, some consumers worry about being replaced by AI in their work, leading to resistance towards using AI-powered office software [23]. For Microsoft, these threats could potentially lower the usage rate of Microsoft 365 Copilot and pose a higher risk. However, the industry threats faced by Microsoft 365 Copilot have a minimal impact on consumers.

### 4 Results & discussion

The overall advantages of Microsoft 365 Copilot are its low learning curve and the integration of AI into a range of daily office software, which reduces the time consumers spend on repetitive tasks and improves office efficiency by reducing communication difficulties. These advantages contribute to the improved PEOU and PU of Microsoft 365 Copilot. The disadvantages of Microsoft 365 Copilot lie in the imprecise language processing of AI and the presence of repetitive results generated by AI. These shortcomings can lower the PU of Microsoft 365 Copilot. Additionally, for users who perceive risks associated with AI, exploring options to disable AI in office software can lower the PEOU of Microsoft 365 Copilot.

This case analysis suggests that enabling or disabling AI assistance in office software will impact the PEOU of the product. An increase in PEOU will have a positive effect on consumer attitudes, while a decrease will have a negative effect. The accuracy of intelligent office software, privacy protection, and diversity of proposed solutions will influence the PU of the product. An increase in PU will positively affect consumer attitudes, while a decrease will have a negative effect.
For Microsoft, to further enhance its advantages, a solution could be to continue expanding its technological edge and deepening collaboration with Chat-GPT to support the integration of more advanced language processing models into office software.

To mitigate the product's disadvantages, Microsoft can explore collaborations with new AI technology companies to develop more accurate or creative solutions for office software. Additionally, Microsoft can add an option to autonomously enable or disable Copilot in Microsoft 365 Copilot, enhancing the PU. Lastly, Microsoft can release privacy disclosure statements before user adoption and regularly publish security reports to educate users about the software's security.

To seize opportunities in the industry, Microsoft can explore collaborations with different types of AI companies, such as those specializing in image recognition, to develop the potential for a variety of software functionalities. Furthermore, Microsoft can collaborate with smart device companies to expand the application scope of Microsoft 365 Copilot.

To mitigate industry threats, Microsoft can increase the product's advantages, such as those specializing in image recognition, to develop the potential for a variety of software functionalities. Furthermore, Microsoft can collaborate with smart device companies to expand the application scope of Microsoft 365 Copilot.

This paper provides evidence to supplement the TAM from the perspective of intelligent office software. The research findings align with previous arguments, indicating that an improvement in PEOU has a positive impact on consumer attitudes and an increase in PU has a positive impact on consumer attitudes.

5 Conclusion

This study focuses on the recently released intelligent office software, Microsoft 365 Copilot, within the context of the increasing public accessibility of AI. Using previous research as a foundation, this study investigates the relationship between PU, PEOU, user attitudes, and user behavior within the context of the TAM. The findings indicate that enhancements to PU and PEOU have a positive effect on user attitudes and conduct. On the basis of this theoretical foundation, a SWOT analysis is conducted, considering Microsoft 365 Copilot's characteristics and its market. The analysis reveals that Microsoft 365 Copilot increases PU and PEOU as a result of its user-friendly interface and the convenience it provides for users' work, which has positive effects on user attitudes and consumption behavior. In addition, while there are some concerns regarding market competition and privacy and security issues, the overall impact of these threats and weaknesses on Microsoft 365 Copilot is deemed to be minimal, given Microsoft's extensive industry capabilities and the public's growing understanding of intelligent products. Therefore, Microsoft 365 Copilot aligns with future tendencies in software development.

This study further validates the positive impact of enhancing PU and PEOU on user attitudes and behavior, thus demonstrating the applicability of TAM theory in the field of intelligent office software. Furthermore, a SWOT analysis is conducted using Microsoft 365 Copilot as a case study, and recommendations are provided based on its strengths, weaknesses, opportunities, and threats. These recommendations can serve as references for research and development of similar products in the same domain.

This research employs a qualitative SWOT analysis based on the TAM theory. Since Microsoft 365 Copilot is an emerging intelligent office software still in the pre-alpha stage, a significant amount of information and data used in this study are sourced from official Microsoft disclosures and similar products. Consequently, the data research in this study is relatively limited, and the analysis carries a certain degree of subjectivity. In future research, it is important to include actual user data and feedback from Microsoft 365 Copilot to ensure a more rigorous study. Additionally, future studies can collect user data through methods such as questionnaire surveys, combining qualitative and quantitative research approaches to enhance the rigor of the research.

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