

Digital Engagement and Technology Acceptance among the Muslim Community in Denmark

A TAM Approach

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Abstract:

This study investigates the Technology Acceptance Model (TAM) within the Muslim community in Denmark, focusing on digital engagement and its impact on religious and community activities. The study aims to understand how perceived usefulness, perceived ease of use, self-efficacy, attitude, and behavioural intention influence the acceptance of digital platforms among Muslim users. Using a structured questionnaire and analysing responses with Structural Equation Modelling (SEM) using AMOS, the study identifies significant predictors of technology acceptance and their interrelationships in the context of digital Islam. The results demonstrate that all hypotheses are supported, indicating a strong influence of perceived ease of use and self-efficacy on both attitude towards technology and its perceived usefulness. This study contributes to the broader discourse on digital Islam, offering insights into how digital tools can enhance religious and social interactions within Muslim communities. The findings provide practical implications for designing culturally sensitive digital solutions tailored to the needs of the Muslim community in Denmark, with a unique unit analysis that provides readers with new knowledge in this field.

Keywords: Technology Acceptance Model (TAM), digital Islam, Muslim community, digital engagement, Denmark, and religious practices

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Introduction

Human resources are vital within organisational structures, as they direct the full spectrum of human capabilities towards achieving success at both individual and organisational levels. Dessler (2017) highlights that these components, encompassing time, energy, and both intellectual and physical human abilities, should be leveraged to their fullest potential to enhance organisational benefits. Human Resources (HR) are recognised as the primary element in both the development process and the achievement of an organisation's objectives (Robbins & Judge, 2013). Without competent HR to manage and utilise an organisation's capital, cutting-edge technology, or natural resource wealth, organisational goals remain unattainable (Dessler, 2017).

Furthermore, as human capital, HR contributes to economic growth by fostering innovative capacities through knowledge development, particularly within research and development departments (Khan et al., 2023). This study delves into the Danish context, noted for its status as "The Happiest Country" and a highly tolerant society that values diversity and excludes religion from its citizens' identities (Jacobsen, 2014). Approximately 7% of the workforce comprises international Muslim employees who have resided in Denmark for the past 30 years. This setting provides a unique backdrop to explore the integration and technology acceptance of the Muslim community, especially in a digitalised era.

Drawing from the Technology Acceptance Model (TAM), this research investigates how perceived usefulness, perceived ease of use, self-efficacy, attitude, and behavioural intention influence the acceptance of digital platforms among Muslim users in Denmark. Prior research has underscored these factors as critical in extending the TAM in various contexts, including higher education environments where digital platforms like Facebook are predominantly used (Al-Qaysi et al., 2020). Additionally, Rafique et al. (2019) emphasise the importance of system quality, perceived ease of use (PEOU), and perceived usefulness (PU) in mobile library applications, suggesting that these core constructs of TAM are crucial for application development.

While TAM has been extensively applied across various fields, its application within culturally and religiously diverse environments reveals significant gaps. For instance, studies by Al-Qaysi et al. (2020) have predominantly focused on higher education environments and the use of platforms like Facebook. However, there is a paucity of comprehensive studies exploring TAM in contexts of religious and cultural diversity, particularly among Muslim communities in non-Islamic countries.

Additionally, works by Rafique et al. (2019) and others have highlighted the importance of core TAM constructs, such as perceived ease of use and perceived usefulness, in technology adoption. These studies often emphasise the generic application of TAM without considering specific cultural nuances that might influence technology acceptance. This presents a gap in understanding how cultural factors and religious beliefs specifically impact technology acceptance among Muslims in Denmark, a country known

for its high tolerance and secular values (Khan et al., 2020).

Moreover, while Khan et al. (2020) explored the impact of external factors such as technological competency and subjective norms on TAM constructs during the COVID-19 pandemic, the interaction between such external factors and cultural and religious identity remains underexplored. This gap is crucial as it could unveil unique insights into how technological solutions can be tailored to better fit the needs and preferences of culturally diverse employee groups.

Additionally, research by Al-Maatouk et al. (2020) posited the task-technology fit (TTF) and TAM within the context of social media for learning, suggesting significant relationships that enhance student satisfaction and performance. However, studies linking these models to workplace learning and development settings in multicultural and multi-religious contexts like Denmark are sparse. This omission indicates a substantial gap in applying these theoretical frameworks to better understand the dynamics of workplace learning among international and religiously diverse employees.

Denmark presents a unique phenomenon. Known as “The Happiest Country” in the world, Denmark boasts high-quality human resources with an average workweek of only 37 hours (Damari et al., 2021). However, workers are not exempt from work-related stress (Yusriani et al., 2023). Preliminary interviews about the use of digital applications among the Muslim community in Denmark revealed that, although free internet is available, 15 out of 25 Muslims interviewed in various cities stated that it is very rare to always be able to use digital information facilities. The majority of the Danish community consists of older people, and there is a generational gap, especially in the use of digital information (Hjorthol et al., 2010). Nevertheless, older people in Denmark experience long-term care, and as a Muslim family, the community in Denmark is caring and keen on sharing lessons (Ismail, 2021).

This research seeks to fill these identified gaps by specifically analysing how cultural and religious contexts influence the application of the Technology Acceptance Model (TAM) within the Muslim community in Denmark. This is particularly pertinent as Denmark, with its distinctive societal values of happiness, tolerance, and secularism, presents a unique context for exploring digital Islam and technology adoption among Muslim populations (Masoud, 2023).

Existing studies have generally not addressed how subjective norms within religious communities interact with the perceived usefulness and ease of use of digital platforms. This study will therefore explore how these norms within the Muslim community in Denmark might influence attitudes towards technology and, ultimately, technology adoption behaviour. The examination of these relationships in a distinctly secular yet culturally diverse setting can add a valuable dimension to our understanding of TAM (Lada et al., 2009; Lew et al., 2020; Masoud, 2023).

Additionally, the aspect of self-efficacy has been explored in various contexts (e.g., Lew et al., 2020; Fearnly et al., 2020) but seldom in the way it interplays with religious identity in technology acceptance. Self-efficacy plays a crucial role in the Technology Acceptance

Model (TAM), particularly in influencing users' perceptions and behaviours related to technology adoption. Here are several reasons highlighting the urgency of self-efficacy within the TAM framework:

User Confidence: Self-efficacy refers to an individual's belief in their ability to perform tasks and achieve goals. In the context of TAM, users with higher self-efficacy are more confident in their ability to learn and use new technologies effectively. This confidence significantly influences their perceptions of ease of use and overall acceptance of the technology.

Impact on Perceived Ease of Use: Users with higher self-efficacy tend to perceive technologies as easier to use because they believe they can overcome challenges and learn to use them proficiently. This positive perception of ease of use enhances their overall acceptance and adoption of the technology.

Behavioural Intentions: Self-efficacy directly affects users' behavioural intentions to adopt and use technology. When users feel confident in their ability to use a technology, they are more likely to develop strong intentions to adopt it. This intention is a key precursor to actual technology adoption behaviours.

Performance and Learning: Self-efficacy influences how users approach learning and mastering new technologies. Higher self-efficacy encourages users to persist in learning and experimenting with the technology, leading to improved performance outcomes and increased satisfaction with the technology.

Reduction of Anxiety: Technologies perceived as complex or difficult can create anxiety and resistance among users. Self-efficacy helps mitigate these negative perceptions by empowering users with the belief that they can effectively manage and use the technology, thereby reducing anxiety and resistance to adoption.

Long-term Adoption: Research suggests that self-efficacy plays a crucial role not only in initial technology adoption but also in sustained usage over time. Users with higher self-efficacy are more likely to continue using the technology and integrate it into their daily routines, contributing to long-term adoption and organisational benefits.

Design Implications: Recognising the importance of self-efficacy, designers and developers can create user interfaces and provide training and support mechanisms that enhance users' confidence in their ability to use the technology. This proactive approach can improve technology acceptance and reduce barriers to adoption.

In conclusion, self-efficacy is critically important within the TAM framework because it directly influences users' perceptions, intentions, and behaviours related to technology adoption. Enhancing self-efficacy can lead to increased user acceptance, improved performance outcomes, and long-term adoption of technologies within organisations and among individuals.

This research will assess whether self-efficacy among Muslim users in Denmark affects their perception of digital tools' usefulness and ease of use, both of which are critical in shaping their technology adoption behaviours.

Moreover, while the contributions of Khan et al. (2020) and Jang et al. (2021) have begun to highlight the importance of integrating modern educational technologies in diverse educational settings, there remains a significant need to examine these dynamics within workplace learning and development in religiously diverse environments. This study will attempt to bridge this gap by investigating how digital tools tailored to religious and cultural sensitivities can enhance engagement and productivity in organisational settings (Khan et al., 2020; Masoud, 2023).

Several applications familiar to Muslims in Denmark are used in daily routines, such as *Islamic Finder*, *My Masjid*, *Halal Check*, and *Halal Tag Finder*. However, this research focuses on the application most commonly used by the Muslim community in Aarhus, Billund, Vejle, and surrounding areas: *Halal Tag Finder*.

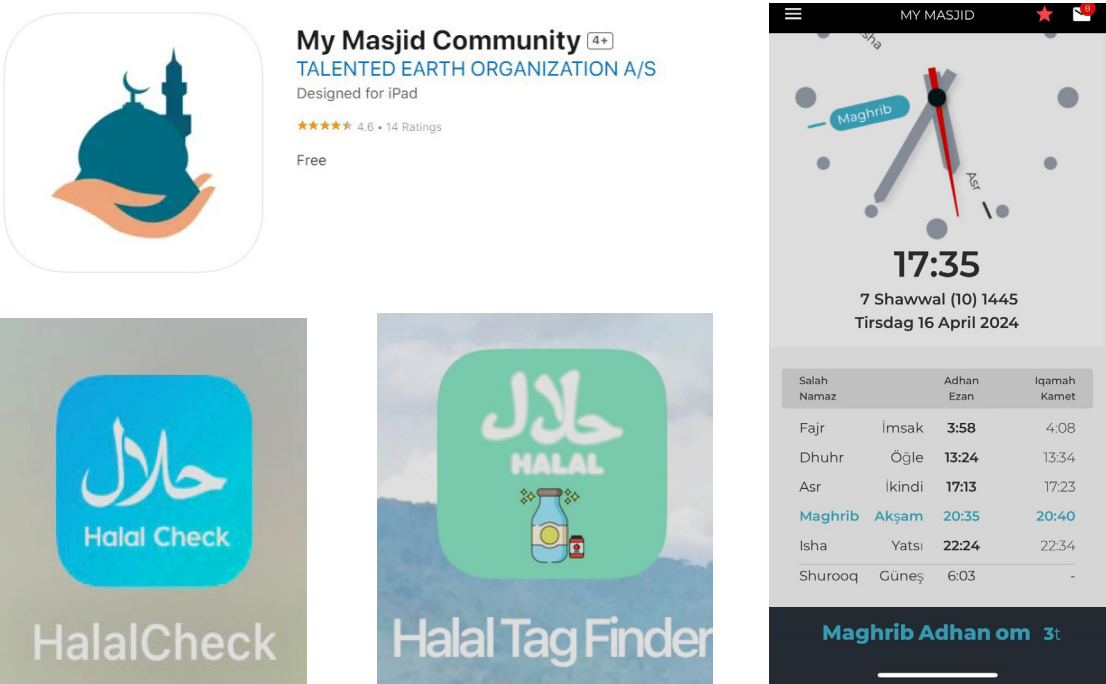


Figure 1: Examples of applications familiar to Mulims in Denmark used in daily routines. Source: Data processed (2024)

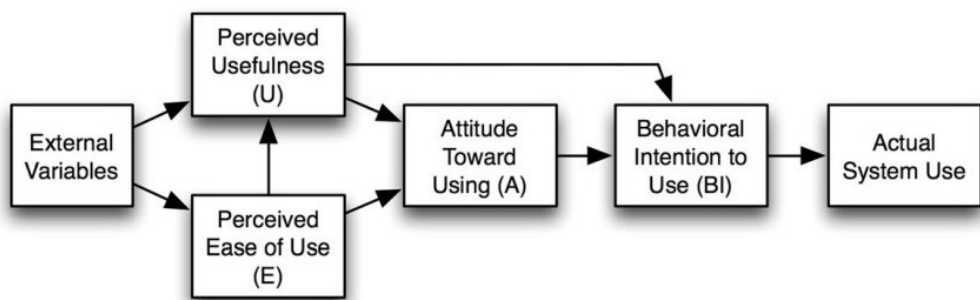


Fig. 1 TAM model (Davis et al. 1989)

Figure 2: TAM model Source: Al-Qaysi et al. (2020). Source: Data processed (2024)

Society · Religion

PREMIUM

Religious beliefs in Denmark in 2023, by origin and age

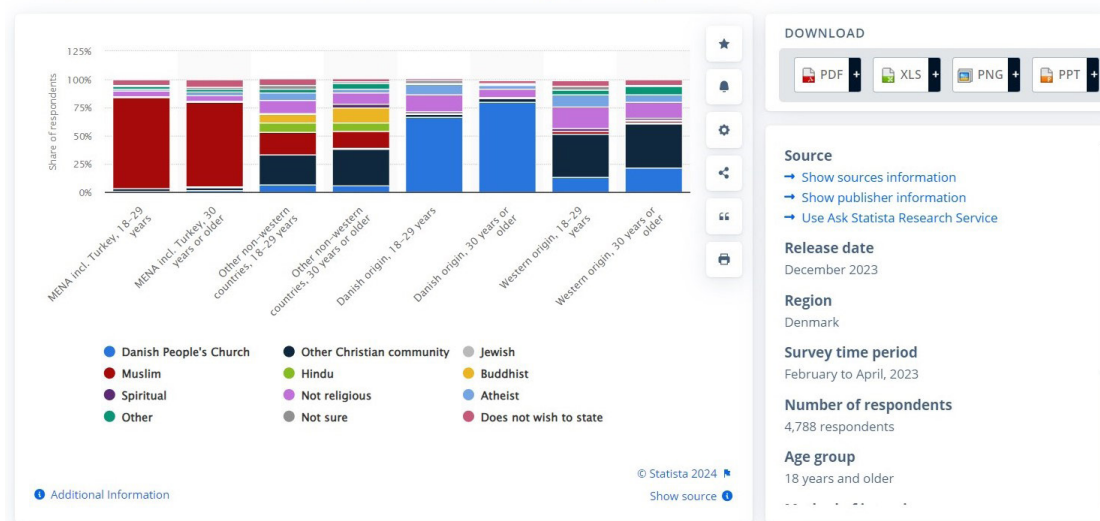


Figure 3: Religious Beliefs in Denmark in 2023 by Origin and Age.
Source: Statista.dk. (2024)

This Figure 3 illustrates the distribution of religious beliefs among various demographic groups in Denmark in 2023, categorised by origin and age. The data are derived from a survey conducted between February and April 2023, involving 4,788 respondents aged 18 years and older.

The categories shown include: Danish People's Church, Other Christian community, Jewish, Muslim, Hindu, Buddhist, Spiritual but not religious, Atheist, Other, Not sure, and Does not wish to state.

The demographic groups analysed are: MENA (including Turkey), aged 18–29 years;

MENA (including Turkey), aged 30 years or older; Other non-Western countries, aged 18–29 years; Other non-Western countries, aged 30 years or older; Danish origin, aged 18–29 years; Danish origin, aged 30 years or older; Western origin, aged 18–29 years; and Western origin, aged 30 years or older.

The figure presents the share of respondents for each religious category within each demographic group, providing a comprehensive overview of religious diversity in Denmark.

The Technology Acceptance Model (TAM), originally developed by Davis in 1989, serves as the theoretical foundation of this study. TAM posits that user acceptance of technology is primarily determined by two specific perceptions: perceived usefulness (PU) and perceived ease of use (PEU) (Davis, 1989). Over the years, TAM has been expanded and adapted to include additional variables, such as self-efficacy and behavioural intentions, which have been shown to further elucidate user behaviour towards technology (Venkatesh & Davis, 2000).

In the context of this research, TAM is particularly relevant as it provides a robust framework for understanding how cultural and religious factors might interact with technological perceptions and usage. This model has been extensively applied across various user groups and technologies, demonstrating its versatility and adaptability in predicting user acceptance and usage behaviour (Venkatesh & Bala, 2008).

From an exhaustive analysis of the existing literature, the following research questions have been proposed to explore the application of TAM within the Muslim community in Denmark:

1. Does perceived usefulness (PU) influence attitudes towards using the digital platform Halal Tag Finder (HTF) among Muslim users in Denmark?
2. This question seeks to understand if the functional benefits of digital platforms are significant enough to positively influence users' attitudes (Davis, 1989).
3. Does perceived ease of use (PEU) influence Muslim users' attitudes towards using HTF digital technology in Denmark?
4. This explores whether the ease with which these technologies can be used affects the overall attitude towards their adoption (Davis, 1989).
5. In the context of Muslim users in Denmark, does self-efficacy influence their intention to use digital technology?
6. Self-efficacy, introduced to TAM-related studies by Compeau and Higgins (1995), examines whether confidence in one's own ability to use technology affects their intention to engage with it.
7. Does the attitude of Muslim users influence their intention to use HTF digital platforms?
8. Building on Ajzen's Theory of Planned Behaviour, this question investigates if a positive attitude towards technology predicts a stronger intention to use it (Ajzen, 1991).

9. Does intention influence actual behaviour in the use of HTF digital technology by the Muslim community in Denmark?

Finally, this question directly ties intention to actual usage, a central proposition of both TAM and the Theory of Planned Behaviour (Ajzen, 1991; Davis, 1989). All direct effects are initial research questions based on scholars' observations in the unit analysis.

Literature Review

TAM Overview

The Technology Acceptance Model (TAM) stands as a foundational theory for understanding user adoption of technology, focusing primarily on perceived usefulness (PU) and perceived ease of use (PEU) (Davis, 1989). According to Davis et al. (1989), TAM posits that these two constructs directly influence an individual's attitude towards using a technology, which subsequently impacts their behavioural intention and actual usage patterns. Over the years, TAM has proven adaptable and robust across various technologies and user populations, establishing itself as a fundamental framework in information systems research (Venkatesh & Davis, 2000).

Perceived Usefulness (PU)

Perceived usefulness is defined as the extent to which an individual believes that using a particular technology system would enhance their job performance (Davis, 1989). This construct has been consistently shown to significantly influence the acceptance and adoption of technology across diverse domains such as education and business (Khan et al., 2020; Huang & Teo, 2020). Research suggests that when users perceive a technology as useful in accomplishing tasks more effectively, they are more inclined to adopt it and integrate it into their professional practices (Al-Qaysi et al., 2020).

Perceived Ease of Use (PEU)

Perceived ease of use refers to the degree to which a person perceives using a technology system to be free of effort (Davis, 1989). This construct not only shapes users' initial attitudes towards a technology but also enhances their perceived usefulness, forming a reciprocal relationship critical for technology acceptance (Venkatesh & Davis, 2000). Studies have consistently shown that systems perceived as easy to use are more likely to be adopted and used effectively by individuals, contributing to their overall satisfaction and productivity (Compeau & Higgins, 1995; Al-Emran et al., 2020).

Attitude

Attitude within the TAM framework represents an individual's positive or negative feelings about using a specific technology (Davis et al., 1989). It serves as a crucial mediator between perceived usefulness, perceived ease of use, and the intention to use technol-

ogy (Ajzen, 1991). According to Ajzen and Fishbein (2000), attitudes are formed through a combination of reasoned and automatic processes. Reasoned processes involve deliberate evaluation of information, while automatic processes are more subconscious and influenced by past experiences. These attitudes can significantly influence both deliberate and spontaneous behaviours related to technology use.

Self-Efficacy

Self-efficacy, rooted in Bandura's social cognitive theory, refers to an individual's belief in their ability to successfully perform tasks using a technology (Bandura, 1986). In the context of technology acceptance, self-efficacy indirectly affects attitudes and actual usage behaviours by influencing perceived ease of use (Compeau & Higgins, 1995; Schwarzer & Jerusalem, 1995). Research indicates that individuals with higher self-efficacy levels are more likely to adopt and effectively use new technologies, contributing to their overall proficiency and confidence in technological environments.

Behavioural Intention

Behavioural intention within TAM signifies an individual's readiness and intention to engage in specific technology-related behaviours (Ajzen, 1991). It serves as a direct precursor to actual technology use and is influenced by attitudes towards the technology (Davis et al., 1989). Numerous studies have demonstrated that behavioural intention is a strong predictor of actual adoption behaviours across various technological applications and contexts (Al-Maatouk et al., 2020; Hanham et al., 2021).

Actual Behaviour

Actual behaviour refers to the observable use of technology in real-world settings (Ajzen, 1991). It is predicted by behavioural intention and influenced by factors such as resource availability and situational opportunities (Ajzen, 1991). Understanding actual behaviour is critical for evaluating the effectiveness of technology adoption strategies and identifying barriers to usage (Rafique et al., 2020; Fearnley & Amora, 2020). By studying actual behaviour, researchers can gain insights into how users interact with technology over time and assess the impact of different factors on adoption and sustained use.

Operationalisation of TAM Constructs

Perceived Usefulness (PU)

Researchers assess PU through items designed to gauge the extent to which users believe that a technology system enhances their job performance (Davis, 1989). Sample statements include: "Using this technology system improves my productivity at work" and "This technology helps me accomplish tasks more efficiently." Responses are typical-

ly rated on a Likert scale ranging from strongly disagree to strongly agree (Davis, 1989).

Perceived Ease of Use (PEU)

PEU is measured using items that evaluate how effortless users perceive it is to interact with a technology system (Davis, 1989). Example statements include: “Learning to use this technology system is easy for me” or “Navigating through this system is straightforward.” Responses are collected on a Likert scale to capture varying degrees of agreement or disagreement (Davis, 1989).

Attitude

Attitudes towards technology are assessed through items that reflect users’ emotional responses and evaluations of using a particular system (Ajzen, 1991). Sample statements include: “I enjoy using this technology system” or “I find using this technology system to be pleasant.” Responses are measured on a Likert scale to capture the intensity and direction of these attitudes (Ajzen, 1991).

Self-Efficacy

Self-efficacy in using technology is measured by items that assess users’ confidence in their ability to perform tasks effectively with the system (Bandura, 1986; Compeau & Higgins, 1995). Example questions include: “I feel confident in my ability to troubleshoot problems with this technology system” or “I can use this technology system even without external assistance.” Responses are typically rated on a Likert scale to indicate varying levels of agreement (Schwarzer & Jerusalem, 1995).

Behavioural Intention

Behavioural intention is assessed through direct questions about users’ intentions to use the technology in the future (Ajzen, 1991). Sample items include: “I intend to use this technology system regularly in my work” or “I plan to increase my usage of this technology system over the next six months.” Responses are measured on a Likert scale to capture the strength and likelihood of these intentions (Davis et al., 1989).

Actual Behaviour

Researchers measure actual behaviour by collecting self-reported usage data or through system-generated metrics (Ajzen, 1991). Questions might inquire about the frequency and extent of technology system usage, such as: “How often do you use this technology system in your daily tasks?” or “Describe how this technology system has been integrated into your workflow.” Depending on the nature of the technology, usage data may also be tracked through logs or analytics tools to provide objective measures of system engagement (Ajzen, 1991).

Current Research Trends and Applications

Recent research has extended TAM's applicability into various emerging technological domains and user populations. For instance, studies have explored the integration of augmented reality (AR) and virtual reality (VR) into learning environments, applying an extended TAM framework to examine acceptance and adoption behaviours (Jang et al., 2021). Additionally, the COVID-19 pandemic has prompted investigations into behavioural intention to use online learning platforms, highlighting the relevance of TAM in understanding rapid technology adoption during crises (Khan et al., 2020).

Moreover, cultural and contextual factors influence the acceptance of technology among different demographic groups and geographical regions. For example, research in the Middle East has adapted TAM to explore factors affecting the adoption of mobile technologies in educational settings, considering unique socio-cultural norms and technological infrastructures (Al-Qaysi et al., 2020). Similarly, studies in East Asia have examined the influence of organisational culture on teachers' acceptance of technology, underscoring the importance of contextual factors in shaping technology adoption behaviours (Huang & Teo, 2020).

Hypotheses

Perceived Usefulness (PU) affects attitude towards the use of the digital platform Halal Tag Finder (HTF) among Muslim users in Denmark.

Perceived Ease of Use (PEU) influences attitude towards the use of the digital platform HTF among Muslim users in Denmark.

Self-Efficacy affects the intention to use the digital platform HTF.

The attitude of Muslim users affects their intention to use the digital platform HTF.

Intention affects actual behaviour in the use of the digital platform HTF by the Muslim community in Denmark.

With all the direct effects in these hypotheses, the research model framework is shown in Figure 4 below.

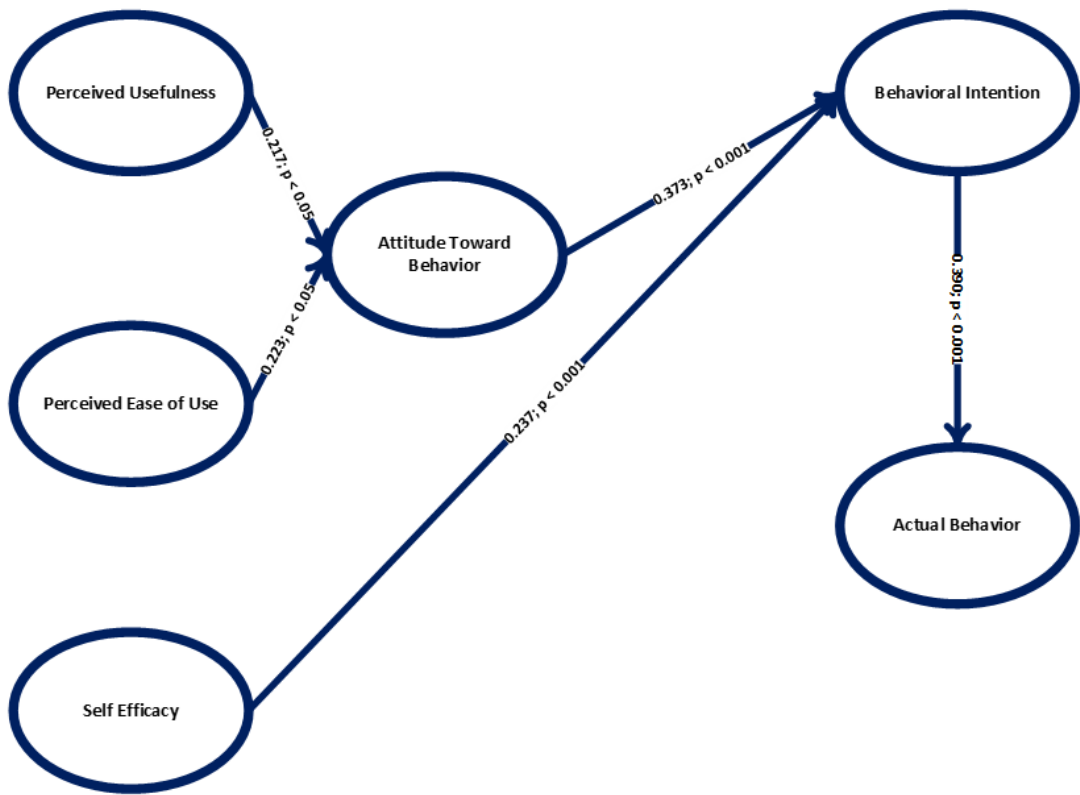


Figure 4: The Research Model Framework

Source: Data processed (2024)

Research Method

Research Design

This study adopts a quantitative research method, characterised by the use of numerical data. According to Saunders et al. (2020), quantitative research examines relationships between variables, which are analysed using statistical techniques and measured numerically. As Sandelowski (2000) notes, quantitative research heavily relies on numerical data, from collection and interpretation to presentation. The method applied here is the exploratory-sequential approach. Preliminary interviews about the use of digital applications among the Muslim community in Denmark revealed that, although free internet is available, 15 out of 25 Muslims interviewed in various cities stated that it is very rare to always have access to digital information facilities. Based on these interviews, the researcher accurately determined the variables to be investigated according to the problems identified in the unit of analysis. Both Sandelowski (2000) and Creswell (2015) agree that research focusing on relationships between social phenomena typically employs quantitative methods.

Referring to its method, this study adopts the survey method. According to Cooper

and Schindler (2014), a survey is a data collection method from natural situations but involves researcher intervention, such as through questionnaires, tests, or structured interviews. The survey method involves collecting data from a group of respondents using a list of questions intended to represent the entire population, utilising questionnaires as described by Cooper and Schindler (2014). Data were collected through observation and questionnaires. The analytical approach adopted in this study is causality. Creswell (2015) defines quantitative research as an approach that explains phenomena using numerical data and mathematical analysis. Meanwhile, causality research, as described by Ragin and Zaret (1983), seeks to find relationships between dependent and independent variables following an event.

The questionnaire is designed to ensure clarity, relevance, and ease of understanding for the target population. Each item is unambiguous and directly linked to the construct it intends to measure, based on the literature reviewed extensively. Additionally, demographic and contextual factors are included to analyse their moderating effects on technology acceptance (Rezaei et al., 2020; Ajzen, 1991; Schwarzer & Jerusalem, 1995; Compeau & Higgins, 1995; Phoenix, 2022).

The survey was conducted from 20 February 2024 to 20 June 2024. The questionnaire uses a Likert scale with the following options:

- 1 = Strongly Disagree
- 2 = Disagree
- 3 = Neutral
- 4 = Agree
- 5 = Strongly Agree

Questionnaires that serve as reference indicators for these variables are derived from previous research (Davis, 1989; Compeau & Higgins, 1995).

Measurement of Constructs

Perceived Ease of Use (PEU)

PEU1: I find it easy to learn how to use the “Halal Tag Finder” application (Davis, 1989).

PEU2: I am skilled at using the “Halal Tag Finder” application (Davis, 1989).

PEU3: I can interact with the “Halal Tag Finder” application clearly (Davis, 1989).

PEU4: The “Halal Tag Finder” application is a flexible program (Davis, 1989).

Perceived Usefulness (PU)

PU1: Using the “Halal Tag Finder” application helps me complete tasks more quickly (Davis, 1989).

PU2: The “Halal Tag Finder” application makes my work easier (Davis, 1989).

PU3: I can increase my productivity using the “Halal Tag Finder” application (Davis,

1989).

PU4: I can improve my work effectiveness with the “Halal Tag Finder” application (Davis, 1989).

Self-Efficacy (SE)

SE1: I can operate the application using my current abilities (Schwarzer & Jerusalem, 1995).

SE2: I am confident in my skills to operate the application (Schwarzer & Jerusalem, 1995).

SE3: I can use the application with available resources (Bandura, 1993).

Attitude (A)

A1: Using the application is a positive experience (Ajzen, 1991).

A2: Using the application is beneficial (Ajzen, 1991).

A3: Using the application is wise (Ajzen, 1991).

Intention (I)

I1: I will use the application next month (Ajzen & Fishbein, 2000).

I2: I intend to use the application next month (Ajzen & Fishbein, 2000).

I3: I plan to use the application next month (Ajzen & Fishbein, 2000).

I4: I am willing to use the application next month (Ajzen & Fishbein, 2000).

Actual Behaviour (AB)

AB: I use the application:

1 = Never

2 = Rarely

3 = Occasionally

4 = Sometimes

5 = Often

6 = Frequently

7 = Always

These indicators are based on previous research by Ajzen and Fishbein (2000), Davis (1989), and Khan et al. (2020).

Pilot Testing

Before full deployment, the questionnaire underwent pilot testing with a small segment of the target population. This process identified issues with item clarity or ques-

tionnaire structure. Feedback was used to refine questions, improve the layout, and ensure the length was appropriate to keep respondents engaged without causing fatigue. Scholars familiar with the Muslim community in Denmark ensured the questionnaire was culturally appropriate. To minimise bias, variables were explained to respondents before they provided their responses.

Data Collection

Data collection methods included online surveys. Google Forms facilitated data collection and initial analysis, while WhatsApp groups and email were used to interact with respondents. Respondents were chosen through purposive sampling (Creswell, 2015; Chin et al., 2008). The exact details of the Muslim population in Denmark are unknown, as outlined in the research background. Purposive sampling was employed due to the absence of a sample frame, ensuring samples were selected based on relevance to the research criteria (Cooper & Schindler, 2014; Sekaran & Bougie, 2016).

The determination of the sample size in this study is closely related to the use of Structural Equation Modelling (SEM) as an analytical tool. The exact details of the Muslim population in Denmark are unknown, as outlined in the research background. The sampling method employed was non-probability sampling, specifically purposive sampling, because the sample frame was unknown. Purposive sampling involves selecting samples based on criteria relevant to the research to determine the number of samples to be studied, thereby improving sample accuracy (Cooper & Schindler, 2014; Sekaran & Bougie, 2016).

In determining the sample size, the researcher referred to Chin et al. (2008), who recommended that the optimal sample size for using SEM, especially variance-based SEM, is at least ten times the number of formative indicators used to measure a single latent variable or ten times the largest number of structural paths directed at a particular latent variable in the structural model. While covariance-based SEM requires a large sample size, encompassing hundreds or even thousands of observations, PLS SEM can be used with a smaller sample size. Research by Chin and Todd (1995) demonstrated that PLS SEM could be effectively used with as few as 20 data points.

This study employs variance-based SEM. Given that there are four structural paths, the sample size, based on Chin et al. (2008), should be at least $4 \times 10 = 40$. This is supported by Cohen et al. (2000), who stated that larger sample sizes improve measurement accuracy in SEM. According to Chin et al. (1995), the minimum sample size for SEM studies is 5 to 10 times the number of indicators. In this study, there are 20 indicators, thus the minimum sample size is $20 \times 10 = 200$ respondents (Chin et al., 1995). Hair et al. (2014) suggested that the minimum sample size for SEM should range from 100 to 300 for models with five or fewer constructs. Aaker et al. (2013) further indicated that larger sample sizes yield better research outcomes by reducing sampling error. Therefore, the sample size in this study is adequate to represent the population.

Ethical Considerations

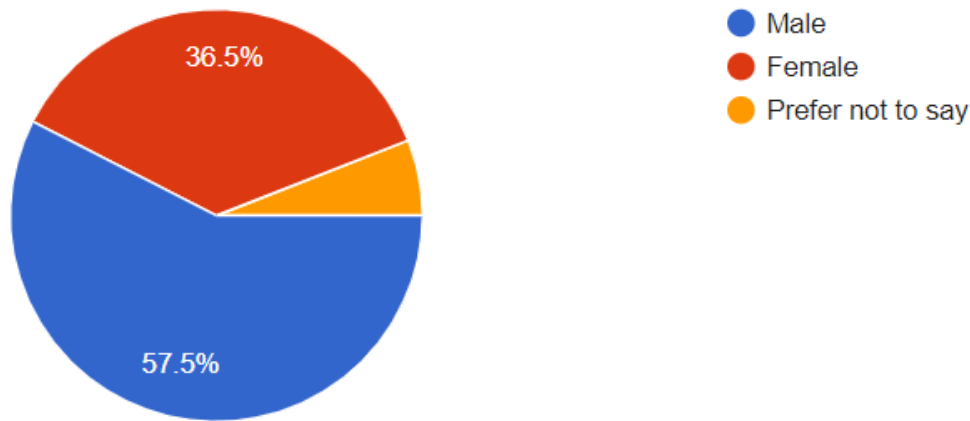
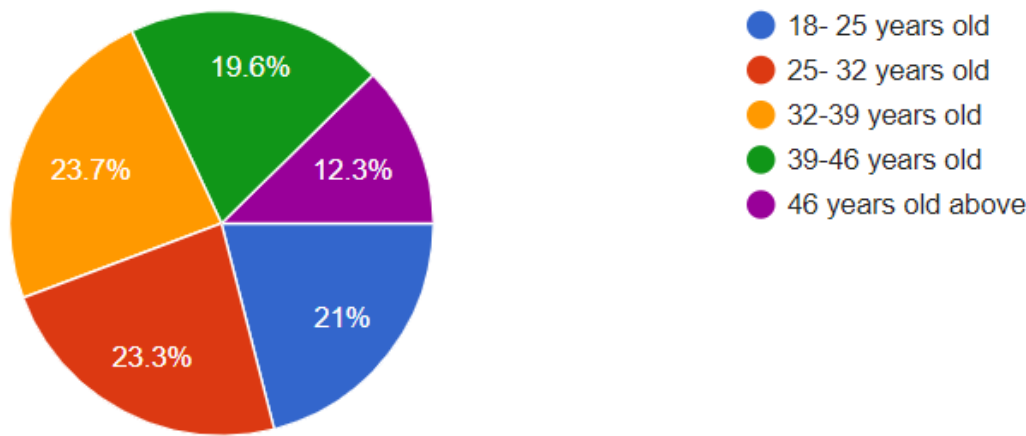
Anonymity and confidentiality were prioritised, especially when dealing with sensitive topics such as technology use in specific cultural and religious contexts. Participants were informed about the study’s purpose, how their data would be used, and their rights, including the right to withdraw from the study at any time.

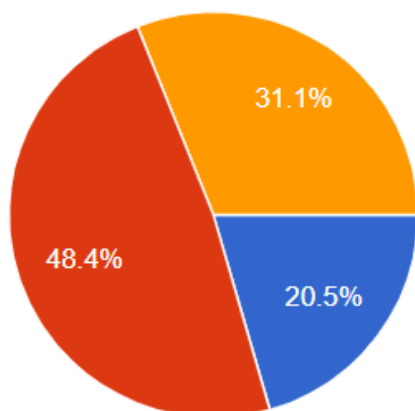
By rigorously developing the questionnaire and adhering to these operational guidelines, this research ensures the collection of high-quality data, effectively capturing the technology acceptance behaviours of the Muslim community in Denmark.

Results

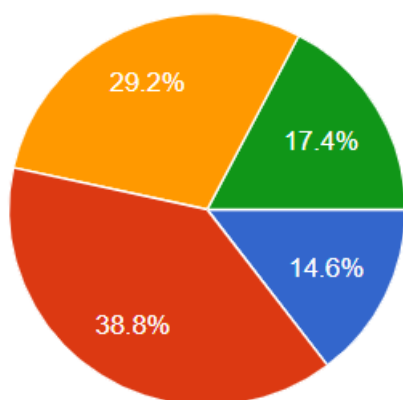
Findings

The sample size for this study is N = 219, with demographic information summarised below.

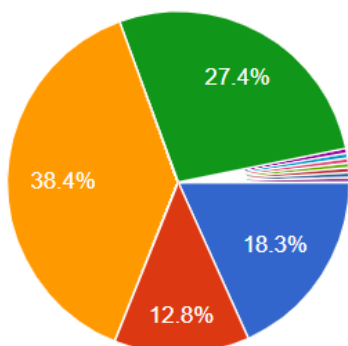




- Married Without Child
- Married With Children
- Unmarried



- High School Diploma
- Bachelor's Degree
- Master's Degree
- Doctoral Degree



- Civil Servant/Public Sector
 - State-Owned Enterprise (Government)
 - Private Sector
 - Academia
 - House wife only
 - House wife
 - Independent designer
 - Pension
- ▲ 1/2 ▼

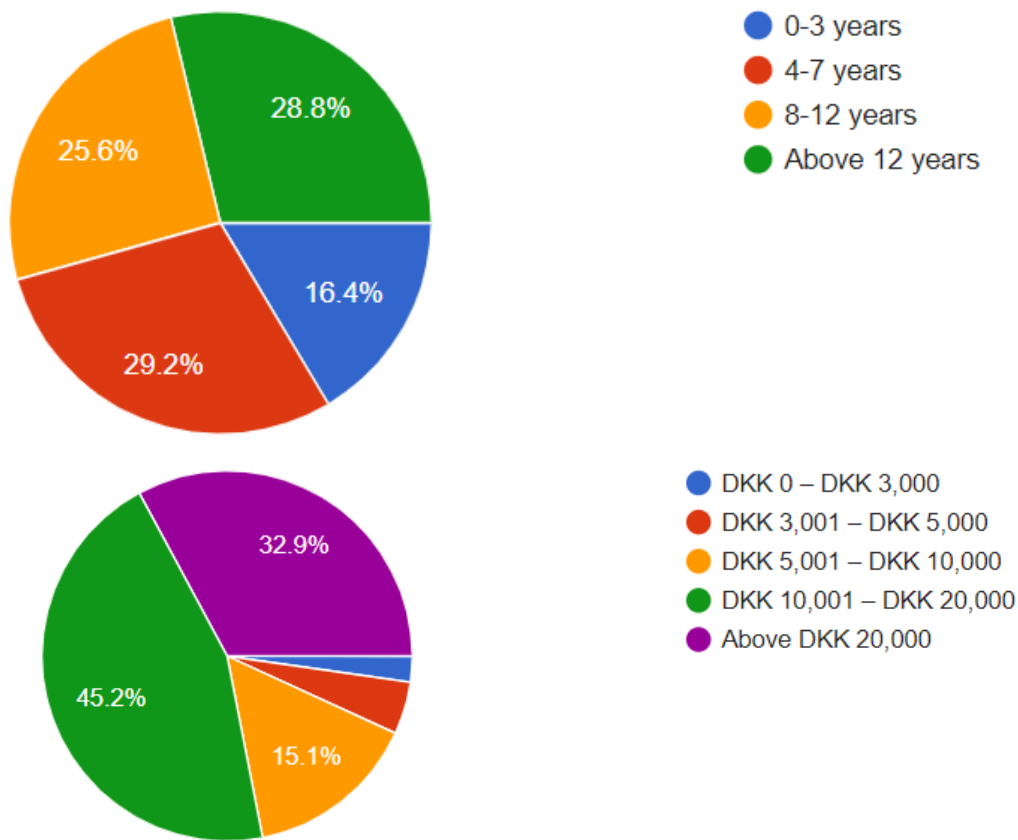


Figure 5: Findings

Regarding the demographic information of the respondents, the age distribution is presented in a pie chart (Figure G). The largest segment of respondents falls within the age group of 25–32 years, constituting 23.7% of the total sample. This is closely followed by the 32–39 years age group, comprising 23.3% of the respondents. The age group of 39–46 years accounts for 19.6% of the participants, while those aged 18–25 years represent 21% of the sample. The smallest segment, comprising 12.3%, includes respondents who are 46 years old and above.

Figure H illustrates that the majority of respondents are male, totalling 57.5%. Figure I shows that most respondents are married with children, comprising 48.4% of the sample. Figure J reveals that the majority of respondents hold a bachelor's degree (38.8%), followed by those with a master's degree (29.2%).

Figure K indicates that the largest group of respondents works in the private sector (38.4%), while students, retirees, and housewives each constitute less than 1%. Figure L

shows that the majority of respondents have lived in Denmark for 4–7 years (29.2%), followed by those who have lived in Denmark for over 12 years (28.8%). Figure M demonstrates that the majority of respondents have monthly expenses ranging between 10,001 DKK and 20,000 DKK (45.2%), with 32.9% reporting monthly expenses exceeding 20,000 DKK.

This distribution suggests a relatively even representation across different age groups, with a slight predominance of younger adults (25–32 and 32–39 years) in the sample.

Additional data regarding respondents’ home countries is presented in Table 1 below:

No	Home Country	Total	%	No	Home Country	Total
1	Afghanistan	2	0.913	27	Kazakhstan	1
2	Algeria	3	1.370	28	Lebanon	6
3	Angola	1	0.457	29	Malaysia	11
4	Australia	1	0.457	30	Mexico	2
5	Bangladesh	1	0.457	31	Morocco	3
6	Belgium	3	1.370	32	Nigeria	2
7	Bosnia	2	0.913	33	Norway	3
8	Brazil	1	0.457	34	Pakistan	1
9	Canada	3	1.370	35	Poland	2
10	Congo	1	0.457	36	Polska	1
11	Colombia	1	0.457	37	Portugal	1
12	Denmark	17	7.763	38	Russia	3
13	Egypt	2	0.913	39	Saudi Arabia	14
14	England	12	5.479	40	Scotland	1
15	España	1	0.457	41	Singapore	6
16	France	7	3.196	42	Somalia	1
17	Germany	6	2.740	43	Spain	2
18	Iceland	1	0.457	44	Sverige	1
19	India	3	1.370	45	Sweden	4
20	Indonesia	23	10.502	46	Syria	9
21	Iran	2	0.913	47	Thailand	1
22	Iraq	2	0.913	48	Tunisia	2
23	Ireland	3	1.370	49	Turkey	14
24	Italia	4	1.826	50	Tyskland	2
25	Jamaica	1	0.457	51	Ukrainian	1
26	Japan	3	1.370	52	USA	17
				53	Yemen	2
Sub total		116	48.402	Sub total		113
Total : 219 Respondents						

Table 1. Nationalities. Note: Tyskland refers to Germany, specifically areas close to the Danish border. *Source:* Data processed (2024).

The hypotheses were tested using Covariance-Based SEM (CB-SEM) with IBM SPSS AMOS. The p-values were $p < 0.05$ and $p < 0.001$. The goodness-of-fit indices are as follows:

CMIN/DF = 2.10

GFI = 0.930

AGFI = 0.927

CFI = 0.945

RMSEA = 0.061

All hypotheses were supported, as detailed below:

H1: Perceived Usefulness (PU) affects the attitude towards using the digital platform Halal Tag Finder (HTF) among Muslim users in Denmark. **Accepted.**

H2: Perceived Ease of Use (PEU) influences the attitude towards using HTF among Muslim users in Denmark. **Accepted.**

H3: Self-Efficacy affects the intention to use HTF. **Accepted.**

H4: The attitude of Muslim users affects their intention to use HTF. **Accepted.**

H5: Intention affects actual behaviour in the use of HTF by the Muslim community in Denmark. **Accepted.** This can be seen in the figure (N) below.

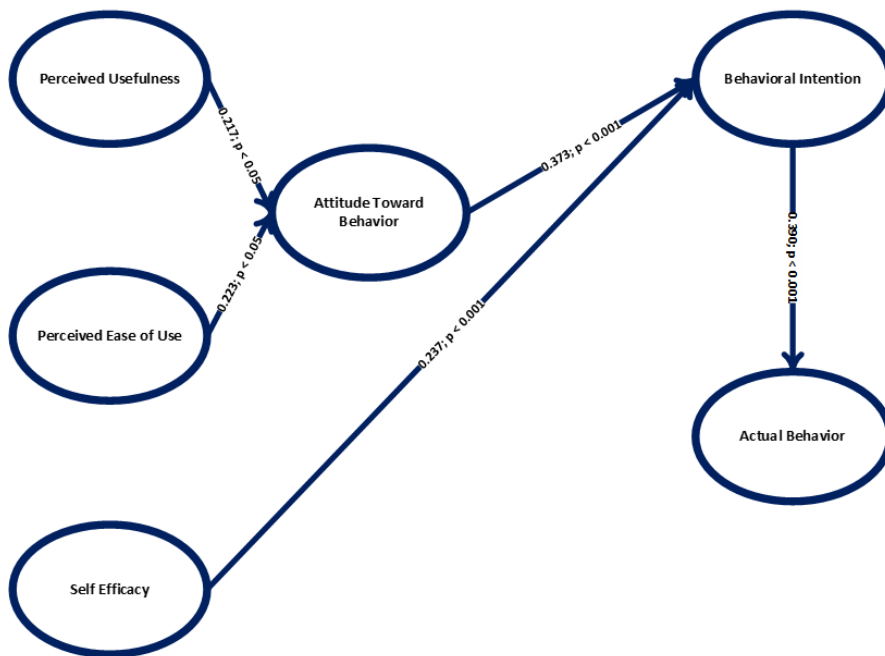


Figure 6: The Results of Hypothesis Testing. Sources: Data processing was conducted using Covariance Based SEM with the IBM SPSS AMOS software (2024)

These findings are consistent with prior research by Davis (1989) and Ajzen & Fishbein (2000), which emphasise the importance of these factors in the Technology Acceptance Model (TAM).

Discussion

All hypotheses tested in this study were supported.

Perceived usefulness (PU) is a central concept in the Technology Acceptance Model (TAM) and plays a crucial role in shaping users' attitudes towards technology adoption. Perceived usefulness refers to the degree to which a user believes that using a particular technology will enhance their job performance or make tasks easier. It reflects the user's subjective evaluation of the technology's utility and benefits. According to TAM, perceived usefulness directly affects users' attitudes towards using a technology. When users perceive a technology as useful, they are more likely to develop a positive attitude towards it. This positive attitude is driven by the belief that the technology will help them achieve their goals more effectively or efficiently. Users assess perceived usefulness based on their cognitive evaluation of the technology's potential benefits. If they believe the technology offers significant advantages over existing methods or tools, they are more inclined to view it favourably.

Attitude, in the context of TAM, comprises both cognitive (belief-based) and affective (emotion-based) components. Perceived usefulness primarily influences the cognitive component of attitude, shaping users' beliefs about the technology's value and benefits. Users' attitudes towards technology, influenced by perceived usefulness, strongly predict their intentions to adopt or use the technology. A positive attitude driven by perceived usefulness increases the likelihood that users will express intentions to adopt the technology. This study has consistently supported the relationship between perceived usefulness and attitude within the TAM framework. Research findings indicate that perceived usefulness significantly contributes to shaping users' attitudes and subsequent adoption behaviours across various technological contexts. Perceived usefulness exerts a significant influence on users' attitudes towards technology adoption by shaping their beliefs about the technology's utility and benefits. This relationship underscores the importance of designing technologies that are perceived as valuable and beneficial to users' tasks and goals.

Perceived ease of use (PEOU) is another fundamental concept in the Technology Acceptance Model (TAM) that directly influences users' attitudes towards technology adoption. Perceived ease of use refers to the degree to which a user believes that using a particular technology will be free of effort. It reflects the user's subjective perception of how easy or difficult it is to use the technology. According to TAM, perceived ease of use significantly influences users' attitudes towards using a technology. When users perceive a technology as easy to use, they are more likely to develop a positive attitude towards it. This positive attitude is driven by the belief that using the technology will not require

significant effort or time.

Technologies perceived as easy to use reduce users' cognitive load and increase their comfort level in interacting with the system. This positive experience fosters a favourable attitude towards the technology. Perceived ease of use affects users' overall experience with the technology. Technologies that are intuitive, user-friendly, and require minimal training or support are typically perceived as easy to use, leading to more positive attitudes. Users' attitudes towards technology adoption, influenced by perceived ease of use, strongly predict their intentions to adopt or use the technology. A positive attitude driven by perceived ease of use increases the likelihood that users will express intentions to adopt the technology.

This study consistently supports the relationship between perceived ease of use and attitude within the TAM framework. Studies across various technological contexts demonstrate that ease of use significantly contributes to shaping users' attitudes and subsequent adoption behaviours. Perceived ease of use plays a crucial role in shaping users' attitudes towards technology adoption by influencing their perceptions of usability, effortlessness, and overall user experience. Designing technologies with a focus on ease of use can enhance user acceptance and adoption by fostering positive attitudes based on the perceived simplicity and user-friendliness of the technology.

In this study, self-efficacy was added to the model to predict behavioural intention. Self-efficacy plays an important role within the framework of technology acceptance. Self-efficacy, as defined by Albert Bandura, refers to an individual's belief in their capability to execute courses of action required to achieve desired outcomes. In the context of technology acceptance, it relates to an individual's confidence in their ability to use and effectively manage a particular technology. Users with higher self-efficacy tend to perceive technologies as easier to use because they believe they can overcome potential challenges and learn to use the technology effectively. Users who are confident in their ability to use a technology are more likely to explore its functionalities and discover its potential benefits, thus enhancing their perception of its usefulness.

This study showed that self-efficacy not only affects initial perceptions of a technology but also plays a role in shaping users' intentions to adopt and their actual usage behaviours. Recognising the role of self-efficacy allows designers and developers to create technologies that are not only user-friendly but also enhance users' confidence in their abilities to use the technology effectively. This can be achieved through training, user interface design that promotes intuitive interaction, and the provision of adequate support mechanisms. This study has supported the inclusion of self-efficacy in technology acceptance models, showing that it contributes significantly to explaining variations in technology adoption and usage behaviours across different user groups and contexts. Self-efficacy in the context of technology acceptance provides a deeper understanding of how users perceive and interact with technology. By considering self-efficacy alongside perceived ease of use and perceived usefulness, researchers and practitioners can better predict and influence users' acceptance and adoption behaviours.

In the context of the Theory of Reasoned Action (TRA) and its extension, the Technology Acceptance Model (TAM), attitudes towards behaviour play a crucial role in shaping users' behavioural intentions. Attitude towards behaviour refers to an individual's overall evaluation or assessment of performing a specific behaviour. It encompasses beliefs about the outcomes of the behaviour and the subjective value or importance attached to those outcomes. Behavioural intention refers to the individual's readiness and willingness to engage in a particular behaviour. It is influenced by various factors, with attitude towards behaviour being a primary determinant. According to TAM, users' attitudes towards using a technology are shaped by their perceptions of perceived usefulness and perceived ease of use. These attitudes, in turn, significantly influence their behavioural intentions regarding whether they plan to adopt and use the technology. Attitude towards behaviour acts as a mediator between perceived usefulness/perceived ease of use and behavioural intention. In other words, users' attitudes towards the technology mediate the relationship between how useful and easy they perceive the technology to be and their intentions to actually use it.

Research indicates that attitudes towards behaviour strongly predict behavioural intentions across various contexts, including technology adoption. Users who have positive attitudes towards using a technology are more likely to form strong intentions to adopt and use it. While TAM primarily focuses on behavioural intention as an immediate precursor to actual behaviour, attitudes towards behaviour also indirectly influence actual usage behaviour. Strong intentions driven by positive attitudes typically lead to higher levels of actual technology adoption and usage. Empirical studies have consistently supported the role of attitude towards behaviour in predicting behavioural intentions and subsequent technology adoption behaviours. This relationship underscores the importance of understanding users' attitudes and perceptions in shaping technology acceptance.

Attitude toward behaviour plays a pivotal role within the Technology Acceptance Model (TAM) by influencing users' intentions to adopt and use technology. Positive attitudes towards technology adoption, driven by perceptions of usefulness and ease of use, enhance users' behavioural intentions and ultimately contribute to higher levels of technology adoption and usage.

In the context of TAM, the relationship between behavioural intention and actual behaviour is critical for understanding how technology adoption unfolds. Behavioural intention refers to an individual's readiness and willingness to perform a specific behaviour—in this case, the intention to use a particular technology. It reflects the individual's subjective likelihood or probability of adopting and using the technology based on their attitudes and perceptions. According to TAM, behavioural intention is a direct precursor to actual behaviour. That is, the stronger a person's intention to use a technology (which is influenced by perceived usefulness, perceived ease of use, and attitude towards behaviour), the more likely they are to engage in actual technology usage.

While TAM primarily focuses on the direct relationship between behavioural intention and actual behaviour, factors such as facilitating conditions (external factors that

support technology use) and perceived behavioural control (an individual's perception of their ability to use the technology) can mediate this relationship. These factors can either facilitate or hinder the translation of intention into actual behaviour. Empirical research in various technological contexts has consistently supported the TAM framework by demonstrating a strong positive relationship between behavioural intention and actual technology usage. Studies show that individuals with stronger intentions to use a technology are more likely to actively engage with it over time.

The theory of behavioural confirmation suggests that when individuals form strong intentions to adopt and use a technology (based on their perceptions and attitudes), they are motivated to seek out confirming experiences that reinforce their intentions. This process further strengthens the link between behavioural intention and actual behaviour. While behavioural intention is a robust predictor of actual behaviour in the short term, over time, actual experience with the technology can also shape subsequent intentions and behaviours. This bidirectional relationship highlights the dynamic nature of technology adoption processes.

Behavioural intention serves as a key determinant of actual technology adoption and usage behaviour. Understanding and influencing users' intentions through factors like perceived usefulness, perceived ease of use, and attitude towards behaviour is crucial for designing effective strategies to promote technology acceptance and usage.

This study demonstrated that the Technology Acceptance Model (TAM) is a widely recognised framework for understanding and predicting users' acceptance and adoption of new technologies. It posits that perceived usefulness (PU) and perceived ease of use (PEOU) influence users' attitudes towards using a technology, which in turn affects their actual usage behaviour. However, while TAM has been influential in understanding user acceptance, its effectiveness in predicting actual behaviour can vary depending on several factors:

Contextual Factors: The applicability of TAM may vary across different technologies and user contexts. Factors such as the complexity of the technology, its compatibility with existing systems, and the specific tasks it supports can influence how well TAM predicts actual behaviour.

Measurement Issues: TAM relies on self-reported perceptions of usefulness and ease of use. These perceptions may not always align perfectly with actual behaviour due to factors such as social desirability bias (users reporting what they think is socially acceptable) or cognitive biases affecting self-assessment.

External Variables: TAM does not always account for external variables that could influence actual usage behaviour, such as organisational policies, social norms, or competing technologies.

Temporal Factors: The relationship between attitudes (as predicted by TAM) and behaviour may change over time. Users' initial perceptions of usefulness and ease of use may evolve as they gain more experience with the technology or as their needs change.

Despite these considerations, TAM remains a valuable theoretical framework for understanding user acceptance and adoption of technology. Researchers often augment TAM with additional variables or use more advanced models to improve its predictive power for actual behaviour. In summary, while TAM provides valuable insights into users' intentions and attitudes towards technology adoption, its direct predictive power for actual behaviour may vary depending on the specific context, measurement methods, and external influences involved in the adoption process.

Conclusion

The findings of this research demonstrate that perceived usefulness (PU) and perceived ease of use (PEU) significantly influence the attitudes of Muslim users in Denmark towards the Halal Tag Finder (HTF) digital platform. Additionally, self-efficacy impacts the intention to use HTF, and both attitude and intention are crucial determinants of actual usage behaviour. These results align with previous studies, including those by Davis (1989) and Ajzen & Fishbein (2000), which emphasise the importance of these factors within the Technology Acceptance Model (TAM).

In conclusion, TAM remains a pivotal framework for understanding the complex dynamics of technology adoption and usage behaviours. By focusing on constructs such as perceived usefulness, perceived ease of use, attitude, self-efficacy, behavioural intention, and actual behaviour, researchers can gain comprehensive insights into the factors influencing user acceptance across diverse technological applications and contexts. Future research should refine TAM constructs further and explore their applicability in emerging technological landscapes to ensure the framework's continued relevance and effectiveness in enhancing technology adoption processes.

The implications of these findings suggest that increasing the perceived usefulness and ease of use of digital platforms can foster positive attitudes and boost usage among target populations. For practitioners, this underscores the importance of prioritising user-friendly and functionally beneficial features in the design and development of digital applications aimed at specific user groups, such as the Muslim community in Denmark.

This research is subject to several limitations. Although the sample size is sufficient for SEM analysis, it may not fully represent the broader population of Muslim users in Denmark. Furthermore, the cross-sectional nature of the study limits the ability to infer causal relationships. Future research should address these limitations by employing a longitudinal design, expanding the sample size, and conducting an in-depth analysis of TAM and related theories, such as the Theory of Planned Behaviour (TPB), the Theory of Reasoned Action (TRA), and Goal Setting Theory. Expanding the construct of self-efficacy to include additional variables from Social Cognitive Theory (SCT), as well as incorporating Work-Life Balance (WLB) and social support, could capture a more diverse demographic and provide richer insights into the quality of human resources in adapting to current technological advancements.

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Author Contributions Statement

Conceptualisation and methodology were developed by Sri Yusriani, under the advisement of Shine Pintor Siolemba Patiro. Data collection and analysis were conducted by Sri Yusriani and Shine Pintor Siolemba Patiro. The manuscript was written by Sri Yusriani, with revisions provided by both authors. A short review and additional input into the descriptive conclusion were contributed by colleagues at the Postgraduate Studies of Indonesia Open University. All authors have read and approved the final manuscript.

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