

When Experience Turns Attitude into Action: The Moderating Role of Technical Experience in E-Learning Adoption among University Staff in Libya

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Abstract: *Positive attitudes toward e-learning do not always become a commitment to use it. This study examines whether employees' technical experience with e-learning strengthens the link between attitude and intention, and so helps explain when favourable evaluations are translated into behavioural plans. Survey data were collected from 365 academic and administrative employees of the University of Tripoli, Libya, between January and June 2026. A model in which perceived usefulness and perceived ease of use shape attitude, and attitude and experience shape intention, was estimated with partial least squares structural equation modelling (PLS-SEM). An interaction term tested the moderating effect of experience. Attitude had a strong positive effect on intention to use e-learning ($\beta = 0.486, p < 0.001$). Experience positively moderated this relationship ($\beta = 0.254, t = 4.080, p < 0.001$). Simple slopes derived from the estimates indicate that the effect of attitude on intention rises from about 0.23 among less experienced employees to about 0.74 among more experienced employees. The model explained 59.2% of the variance in intention. The study reframes experience from a factor that weakens the role of beliefs to one that strengthens attitude-behaviour consistency, drawing on attitude-strength theory. In a fragile higher education system, it shows that building employees' hands-on experience is a precondition for favourable attitudes to become committed use.*

Keywords: experience; attitude-intention gap; moderation; e-learning; university staff; Libya.

1. Introduction

Universities often assume that if staff like a new technology, they will use it. Research on attitudes suggests the link is less reliable. Across decades of studies in social psychology, attitudes predict intentions and behaviour only moderately, and the strength of that prediction varies widely from one person and situation to another (Kraus, 1995; Glasman & Albarracín, 2006). For institutions trying to embed e-learning after the COVID-19 disruption, this attitude-intention gap has practical consequences. Campaigns that make staff feel positive about digital teaching and administration may fail to produce sustained use if those positive feelings are not converted into firm plans. The question of when attitudes are converted into intentions is especially pressing in fragile higher education systems. In Libya, public universities have operated through prolonged political division, periodic armed conflict and chronic weaknesses in electricity supply and internet connectivity (Rhema & Miliszewska, 2012; Ghawail et al., 2021). E-learning expanded rapidly after 2020, but its use remains

uneven and depends heavily on individual initiative (Badi & Noor, 2024). In such conditions, many employees may hold a favourable view of e-learning while remaining uncertain whether they can, or will, use it regularly. Technology acceptance research offers an obvious candidate for explaining this variation: experience. Yet the way experience has been treated in that literature is narrow. In the Technology Acceptance Model (TAM) and the Unified Theory of Acceptance and Use of Technology (UTAUT), experience is mainly a factor that changes the weight of beliefs, usually by reducing the importance of ease of use and social influence as users become familiar with a system (Venkatesh & Davis, 2000; Venkatesh et al., 2003). UTAUT dropped attitude from its core model, so the question of whether experience changes how strongly attitudes drive intention has received little direct attention (Taylor & Todd, 1995b; Kim & Malhotra, 2005).

Attitude-strength theory suggests a clear answer. Attitudes formed through direct experience are more confident, more accessible and more predictive of behaviour than attitudes formed indirectly (Fazio & Zanna, 1981; Glasman & Albarracín, 2006). Applied to e-learning, this implies that employees with more hands-on experience should translate their attitudes into intentions more consistently than employees whose views rest on hearsay, training sessions or institutional messaging. Experience would then act not as a brake on beliefs but as an amplifier of the attitude-intention link. This study tests that proposition among 365 academic and administrative employees of the University of Tripoli, Libya's largest and oldest public university. It addresses two research questions:

How strongly does attitude toward e-learning technology predict employees' intention to use it, once the effects of perceived usefulness and perceived ease of use are accounted for? Does employees' technical experience with e-learning strengthen the relationship between attitude and intention? The study makes three contributions. First, it brings attitude-strength theory into technology acceptance research and shows that experience moderates the attitude-intention relationship positively, a mechanism that standard TAM and UTAUT specifications do not capture. Second, it quantifies the size of that moderation: among the most experienced employees, the effect of attitude on intention is roughly three times as large as among the least experienced. Third, it offers guidance for universities in fragile settings, where resources are scarce and investment must be targeted: building staff experience is what allows favourable attitudes to become committed use. The paper proceeds as follows. Section 2 reviews the theoretical background and develops the hypotheses. Section 3 describes the method, and Section 4 reports the results. Section 5 discusses the findings, and Section 6 sets out implications, limitations and directions for future research.

2. Theoretical background and hypotheses

2.1 E-learning adoption among university staff in Libya

E-learning in universities is not only a teaching tool. Learning management systems and related platforms are also used to register students, publish results, manage examinations and communicate with departments. Academic and administrative staff are therefore both users whose daily choices determine whether e-learning becomes institutional routine or remains an emergency fallback. Libyan higher education offers a demanding setting for studying those choices. Earlier work identified e-learning as a way to help post-crisis countries rebuild their universities, while warning that infrastructure, training and policy gaps would limit uptake (Rhema & Miliszewska, 2012). More recent studies confirm that these barriers persist: unreliable power and connectivity, few devices, limited technical support and the absence of a coordinated national strategy (Ghawail et al., 2021; Awheda & Radwan, 2022). A systematic review of e-learning acceptance among Libyan lecturers found that most studies were descriptive and rarely tested theoretical mechanisms (Badi & Noor, 2024). Little is known, in particular, about why some staff who view e-learning favourably commit to using it while others do not.

2.2 Attitude and intention in technology acceptance

In the Theory of Reasoned Action and the Theory of Planned Behavior, attitude, a person's overall positive or negative evaluation of performing a behaviour, is a direct antecedent of intention (Fishbein & Ajzen, 1975; Ajzen, 1991). The original TAM adopted this structure: perceived usefulness and perceived ease of use shape attitude, and attitude and usefulness shape intention (Davis, 1989; Davis et al., 1989). Later models removed attitude on grounds of parsimony, arguing that its effect was largely captured by the beliefs that formed it (Venkatesh & Davis, 2000; Venkatesh et al., 2003). Evidence since then has been mixed. Some studies find that attitude adds little once beliefs are modelled; others find it the strongest predictor of intention, particularly where use is voluntary or not yet routine (Taylor & Todd, 1995a; Yang & Yoo, 2004). Meta-analytic work in education indicates that attitude is a substantial predictor of teachers' intentions to use digital technology and mediates a large share of the effects of usefulness and ease of use (Scherer et al., 2019). This variation suggests that the attitude-intention relationship is not fixed but depends on conditions that the standard models do not specify.

2.3 Experience in technology acceptance research

Experience has long been recognised as an important boundary condition in acceptance research. Taylor and Todd (1995b) showed that the determinants of intention differ between experienced and inexperienced users, with experienced users placing more weight on factors linked to their actual use. Karahanna et al. (1999) found that the beliefs that shape intention before adoption differ from those that shape it after adoption. In TAM2 and UTAUT, experience moderates several relationships, typically weakening the effect of ease of use and social influence as users become familiar with a system (Venkatesh & Davis, 2000; Venkatesh et al., 2003; Venkatesh et al., 2012). Two features of this literature are relevant here. First, experience is usually modelled as reducing the importance of certain beliefs, rather than as changing how evaluations become intentions. Second, because UTAUT excludes attitude, the attitude-intention link has rarely been examined as a relationship that experience might moderate. Research on continued use provides a partial exception: Kim and Malhotra (2005) and Limayem et al. (2007) show that, as use accumulates, prior evaluations and habits increasingly shape later intentions and behaviour. These studies imply that experience changes the way evaluations feed into behaviour, but they do not test that mechanism directly among staff in developing-country institutions.

2.4 Attitude strength and direct experience

Social psychology offers a sharper account of why experience should matter. Attitudes differ in strength: strong attitudes are held with confidence, come to mind easily, resist change and predict behaviour well, whereas weak attitudes are unstable and poor guides to action (Fazio & Zanna, 1981). One of the most consistent determinants of attitude strength is direct experience with the attitude object. Attitudes formed through personal experience are more accessible and more predictive of behaviour than those formed through second-hand information (Fazio & Zanna, 1981). A meta-analysis of the attitude-behaviour relation confirmed that attitudes predict future behaviour more strongly when they are based on direct experience and held with confidence (Glasman & Albarracín, 2006).

A related argument comes from self-efficacy theory. People are more likely to act on their evaluations when they believe they can perform the behaviour successfully, and mastery experience is the most powerful source of such beliefs (Bandura, 1977). In technology use, computer self-efficacy grows with hands-on practice and increases the likelihood that people follow through on their intentions

(Compeau & Higgins, 1995). In the present study, the experience construct explicitly captures both dimensions: the extent and frequency of prior use, and the confidence that it brings. For university employees, these arguments imply a clear pattern. An employee with little experience of e-learning may express a favourable attitude based on institutional messages, colleagues' reports or a single training session. That attitude is likely to be tentative and paired with uncertainty about practical difficulties, so it will translate only weakly into a commitment to use the system. An employee with extensive experience holds an attitude grounded in repeated personal use and is confident in handling the system. That attitude is more likely to become a firm intention.

2.5 Hypotheses

Consistent with TAM and the theories of reasoned action and planned behaviour, employees who evaluate e-learning more favourably should report stronger intentions to use it, even after accounting for their beliefs about its usefulness and ease of use. H1. Attitude toward e-learning technology has a positive effect on employees' intention to use e-learning technology. Drawing on attitude-strength and self-efficacy theory, the effect of attitude on intention should be stronger among employees with more experience, because their attitudes are more confident, more accessible and backed by a belief in their ability to act on them. H2. Experience with e-learning technology positively moderates the relationship between attitude and intention, such that the relationship is stronger for employees with more experience. The research model (Figure 1) retains TAM's antecedents of attitude, perceived usefulness and perceived ease of use, together with their direct paths to intention, so that the attitude-intention relationship is estimated net of the beliefs that form it. Experience also enters as a direct predictor of intention, which is necessary to estimate the interaction correctly. These paths serve as the baseline model; their hypothesised effects and the mediating role of attitude are examined in a companion study.

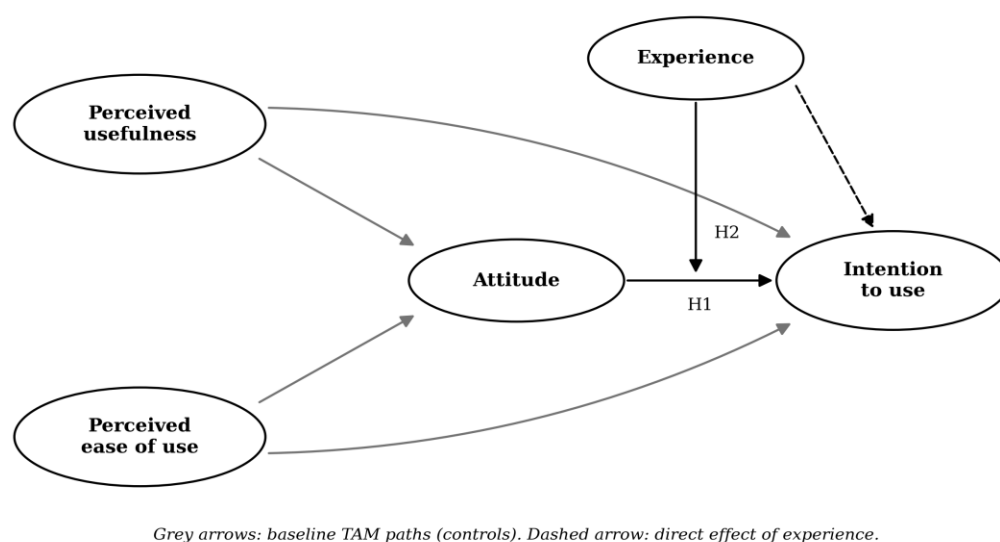


Figure 1. Research model. H1 is the effect of attitude on intention; H2 is the moderating effect of experience on that relationship. Grey arrows show the baseline TAM paths; the dashed arrow shows the direct effect of experience on intention.

3. Methodology

3.1 Setting, population and sampling

The study used a quantitative, cross-sectional survey design. Data came from the University of Tripoli, chosen among Libya's 29 public universities because it is the largest by enrolment, the oldest, and located in a city where teaching had continued without major interruption for at least three years before data collection. Studying one institution held the e-learning platform and policy environment constant across respondents, which matters when the aim is to isolate individual-level differences such as experience. The university employed 9,314 staff at the time of the study, of whom 5,680 were administrative employees and 3,634 were faculty members. Krejcie and Morgan's (1970) table indicates a minimum sample of 365 for a population of this size. In the absence of a complete staff register, a convenience sample was drawn: staff who agreed to take part received an emailed link to an online questionnaire. All items were mandatory and each respondent could submit only once. Between January and June 2026, 365 complete responses were received, and all were retained for analysis.

3.2 Measures

Five constructs were measured on five-point Likert scales (1 = strongly disagree, 5 = strongly agree), each with five items adapted from established instruments. Attitude captured employees' overall evaluation of using e-learning in their work, for example "I like the idea of integrating e-learning into my daily routine", and intention captured their plans to use and recommend it, for example "I plan to continue using e-learning systems in the future"; both were adapted from Xu et al. (2024). Experience was measured with items reflecting the extent and frequency of prior e-learning use and the confidence it provides, adapted from Lwoga et al. (2013). Perceived usefulness and perceived ease of use, the baseline antecedents, were adapted from Asif (2024). Table 1 lists the items for the three focal constructs; the remaining items are provided in the Appendix. Respondents also reported gender, age, position, monthly frequency of e-learning use and years of experience with e-learning technology.

Table 1. Items for the focal constructs

Construct	Code	Item
Attitude (ATT)	ATT1	I have a positive attitude toward using e-learning in my work.
	ATT2	Using e-learning is useful and effective for my professional tasks.
	ATT3	I like the idea of integrating e-learning into my daily routine.
	ATT4	E-learning represents a good approach to my workplace activities.
	ATT5	I find using e-learning systems an enjoyable experience.
Intention to use (INT)	INT1	I intend to use e-learning regularly in my professional role.
	INT2	I plan to continue using e-learning systems in the future.
	INT3	I want to adopt new features and updates of e-learning tools.
	INT4	I recommend my colleagues to use e-learning.
	INT5	I expect to use e-learning platforms frequently in my tasks.
Experience (EXP)	EXP1	I have extensive experience in using e-learning systems in my work.
	EXP2	I frequently use digital learning platforms in professional tasks.
	EXP3	I am confident in my ability to use e-learning technologies effectively.
	EXP4	My previous experience helps me to deal efficiently with e-learning systems.
	EXP5	I have sufficient experience in using e-learning tools to handle new tasks easily.

The instrument's content validity was checked by a panel of five academics, whose comments led to minor revisions of wording. A pilot with 20 university employees, who did not take part in the main survey, produced Cronbach's alpha values between 0.799 (experience) and 0.905 (perceived usefulness), with 0.885 for attitude and 0.900 for intention.

3.3 Data screening

The online form prevented missing data. All item z-scores lay within ± 3.29 , so no univariate outliers were removed (Tabachnick & Fidell, 2007). Item means for the focal constructs ranged from 3.54 to 4.07, showing generally favourable responses with adequate variance (standard deviations 0.75 to 1.00). Several items showed skewness or kurtosis beyond ± 2 , indicating non-normal data.

3.4 Analysis

Partial least squares structural equation modelling (PLS-SEM) was used, implemented in SmartPLS 3 (Ringle et al., 2015). The method suits models that include interaction terms between latent variables, does not require normally distributed data and is appropriate when the goal is to explain variance in a key outcome (Henseler & Chin, 2010; Hair et al., 2019). The measurement model was evaluated first, through indicator loadings, internal consistency reliability, convergent validity and discriminant validity. The structural model was then evaluated through collinearity diagnostics, R^2 , Q^2 , f^2 and bootstrapped path coefficients (Hair et al., 2017). To test H2, an interaction term was created between experience and attitude and added as a predictor of intention alongside both main effects (Henseler & Chin, 2010; Becker et al., 2018). Because the constructs are standardised in PLS-SEM, the main effect of attitude represents its effect on intention at the mean level of experience, and the interaction coefficient indicates how much that effect changes for each standard deviation change in experience (Aiken & West, 1991; Dawson, 2014). Simple slopes at one standard deviation below and above the mean of experience were calculated from these estimates to interpret the moderation.

4. Results

4.1 Sample characteristics

The sample comprised 219 administrative staff (60.0%) and 146 faculty members (40.0%), close to their proportions in the university workforce. Women made up 54.0% of respondents, and just over half (52.3%) were aged 31 to 40. Experience with e-learning varied widely, which is essential for testing its moderating role (Table 2). About a quarter of respondents (26.3%) had fewer than four years of experience, 37.0% had four to seven years, and 36.7% had more than seven. Frequency of use also varied, from once a month (8.5%) to more than five times a month (12.9%).

Table 2. E-learning experience and use (N = 365)

Characteristic	Category	n	%
Years of experience with e-learning	Less than 1 year	25	6.8
	1–3 years	71	19.5
	4–7 years	135	37.0
	8–10 years	84	23.0
	More than 10 years	50	13.7

Characteristic	Category	n	%
Monthly use of e-learning platforms	Once	31	8.5
	Twice	54	14.8
	Three times	80	21.9
	Four times	88	24.1
	Five times	65	17.8
	More than five times	47	12.9
Position	Administrative staff	219	60.0
	Faculty member	146	40.0

4.2 Measurement model

The measurement model met all standard criteria (Table 3). Indicator loadings ranged from 0.703 to 0.815. Cronbach's alpha (0.733 to 0.847) and composite reliability (0.823 to 0.891) exceeded 0.70, and AVE (0.532 to 0.620) exceeded 0.50, establishing internal consistency and convergent validity (Hair et al., 2019).

Table 3. Measurement model results

Construct	Loadings (range)	Cronbach's α	Composite reliability	AVE
Attitude	0.719–0.737	0.780	0.850	0.532
Intention to use	0.703–0.798	0.733	0.823	0.583
Experience	0.714–0.790	0.790	0.856	0.544
Perceived usefulness	0.758–0.811	0.847	0.891	0.620
Perceived ease of use	0.706–0.815	0.828	0.879	0.592

Discriminant validity was supported by the Fornell-Larcker criterion, by item cross-loadings, and by heterotrait-monotrait ratios, all of which were below 0.85 (Henseler et al., 2015). Discriminant validity between experience and attitude is particularly important here, because the moderation test assumes they are distinct constructs. Their HTMT ratio was 0.658 and their latent correlation 0.579, confirming that experience with e-learning and evaluation of e-learning are related but empirically separate. The HTMT ratios for experience with intention (0.564) and attitude with intention (0.643) were similarly acceptable.

4.3 Structural model

Inner VIF values ranged from 2.190 to 2.953, so collinearity among predictors was not problematic (Hair et al., 2019). The SRMR of the estimated model was 0.077, below the 0.08 threshold (Hu & Bentler, 1999). The model explained 37.8% of the variance in attitude and 59.2% of the variance in intention (adjusted $R^2 = 0.375$ and 0.586). Q^2 values from blindfolding were 0.420 for attitude and 0.209 for intention, indicating predictive relevance (Stone, 1974; Geisser, 1974). Table 4 reports the structural paths. Attitude had a strong, positive effect on intention ($\beta = 0.486$, $t = 7.444$, $p < 0.001$) and the largest effect size in the model ($f^2 = 0.264$), supporting H1. Experience also contributed directly to intention ($f^2 = 0.066$). The baseline TAM paths were all positive and significant: perceived ease of use ($\beta = 0.410$) and perceived usefulness ($\beta = 0.241$) shaped attitude, and both had smaller direct effects on intention.

Table 4. Structural model results

Path	β	SD	t	p	f ²	Result
ATT → INT (H1)	0.486	0.065	7.444	< 0.001	0.264	Supported
EXP × ATT → INT (H2)	0.254	0.062	4.080	< 0.001	—	Supported
<i>Baseline paths</i>						
PU → ATT	0.241	0.069	3.482	0.001	0.038	Significant
PEOU → ATT	0.410	0.075	5.502	< 0.001	0.111	Significant
PU → INT	0.182	0.072	2.515	0.021	0.001	Significant
PEOU → INT	0.157	0.072	2.178	0.029	0.020	Significant

Note: ATT = attitude; INT = intention to use; EXP = experience; PU = perceived usefulness; PEOU = perceived ease of use; SD = bootstrap standard deviation. Experience was entered as a direct predictor of intention ($f^2 = 0.066$).

4.4 Moderation analysis

The interaction between experience and attitude had a positive and significant effect on intention ($\beta = 0.254$, $SD = 0.062$, $t = 4.080$, $p < 0.001$; bootstrap sample mean = 0.256). H2 was therefore supported: the more experience employees have with e-learning, the more strongly their attitude predicts their intention to use it. To interpret the size of the moderation, simple slopes were computed at low (−1 SD), average and high (+1 SD) levels of experience (Aiken & West, 1991; Dawson, 2014). As Table 5 shows, the effect of attitude on intention is modest among employees with low experience (0.232), strong at average experience (0.486) and very strong among employees with high experience (0.740). In other words, for the most experienced employees a one-standard-deviation improvement in attitude is associated with roughly three times the increase in intention that the same improvement produces among the least experienced.

Table 5. Simple slopes of attitude on intention at different levels of experience

Level of experience	Calculation	Effect of attitude on intention
Low (−1 SD)	$0.486 - 0.254$	0.232
Average (mean)	0.486	0.486
High (+1 SD)	$0.486 + 0.254$	0.740

Note: Slopes are computed from the standardised estimates in Table 4.

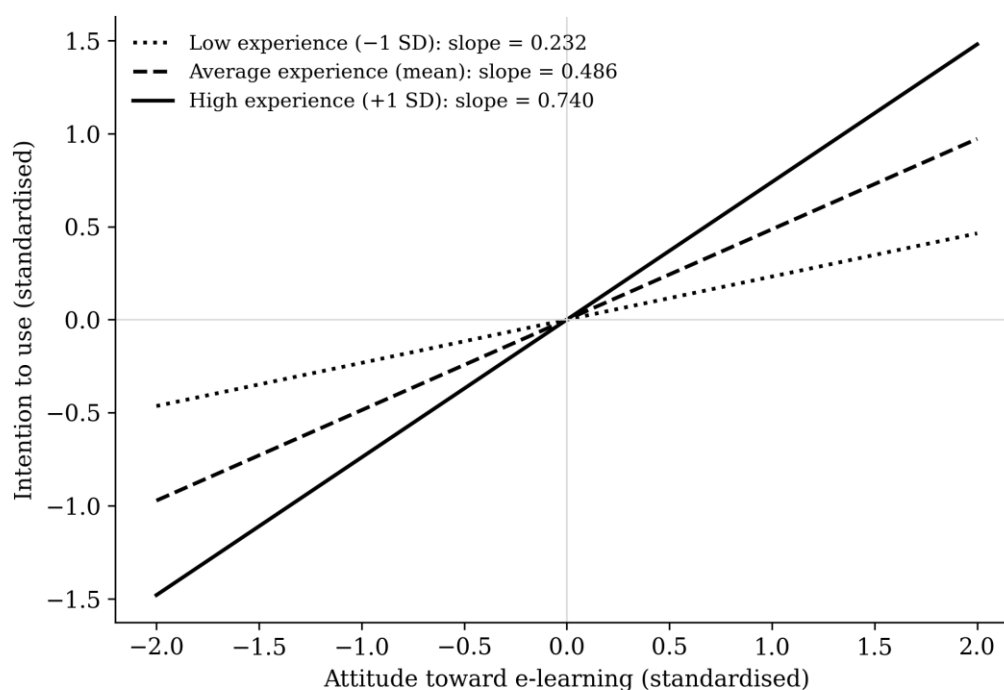


Figure 2. Simple slopes of attitude on intention at low (-1 SD), average and high ($+1$ SD) experience. Lines share a common intercept so that their slopes can be compared directly.

Table 6 summarises the hypothesis tests.

Table 6. Summary of hypothesis tests

Hypothesis	Statement	Result
H1	Attitude has a positive effect on intention to use e-learning technology.	Supported
H2	Experience positively moderates the attitude-intention relationship.	Supported

5. Discussion

This study set out to explain when university employees' attitudes toward e-learning become intentions to use it. Two results stand out. Attitude was the strongest single predictor of intention, and experience substantially amplified its effect.

5.1 Attitude as the central driver of intention

Attitude predicted intention strongly ($\beta = 0.486$) and made the largest unique contribution to explained variance in the model ($f^2 = 0.264$), even with perceived usefulness, perceived ease of use and experience controlled. This supports those who have argued that attitude should not have been removed from acceptance models (Taylor & Todd, 1995a; Yang & Yoo, 2004). In a system where e-learning is promoted but not yet embedded in routine, employees' general evaluation of the technology appears to be the main force behind their plans to use it. The result is consistent with meta-analytic evidence from education, which finds attitude to be a substantial predictor of teachers' technology use intentions (Scherer et al., 2019). It also fits the logic of the theories from which TAM was derived: when behaviour is discretionary and not yet habitual, people rely on their overall evaluation of a behaviour to decide whether to perform it (Fishbein & Ajzen, 1975; Ajzen, 1991).

5.2 Experience amplifies the attitude-intention link

The central finding is that experience strengthened the attitude-intention relationship. The effect of attitude on intention was about three times as large for highly experienced employees (0.740) as for those with little experience (0.232). Favourable attitudes held by inexperienced staff therefore translate only weakly into commitment, while the same attitudes held by experienced staff translate into firm intentions. This pattern matches attitude-strength theory closely. Attitudes grounded in direct experience are more confident and accessible, and so guide intentions more reliably (Fazio & Zanna, 1981; Glasman & Albarracín, 2006). An inexperienced employee may say that e-learning is a good idea on the strength of a workshop or a colleague's account, but that view is tentative. Uncertainty about how the system works in practice, or about coping with power cuts and slow connections, leaves a gap between liking and intending. An experienced employee's positive attitude is informed by repeated use and accompanied by confidence in handling difficulties, and it therefore carries through into intention. The self-efficacy argument points in the same direction. The experience measure included items on confidence and on the ability to handle new tasks. Mastery experience builds self-efficacy, and self-efficacy is what enables people to act on their evaluations (Bandura, 1977; Compeau & Higgins, 1995). In a difficult technical environment, confidence in one's own ability may be what separates a favourable view from a plan to act.

5.3 Reframing experience in acceptance research

These findings extend how experience is understood in technology acceptance research. In TAM2 and UTAUT, experience mainly weakens the influence of certain beliefs, such as ease of use and social influence, as users become familiar with a system (Venkatesh & Davis, 2000; Venkatesh et al., 2003). The present study shows that experience can also strengthen a relationship: it increases the consistency between what employees feel about e-learning and what they intend to do. The two roles are compatible. As experience grows, users may rely less on abstract beliefs about effort and more on their integrated evaluation of the system. Experience would then shift the basis of intention from specific beliefs toward overall attitude, which is consistent with Taylor and Todd's (1995b) evidence that experienced and inexperienced users form intentions differently, and with research on continued use showing that prior evaluations increasingly drive later behaviour (Kim & Malhotra, 2005; Limayem et al., 2007). Acceptance models that exclude attitude cannot capture this shift, which is a further argument for retaining it, particularly in studies of experienced or mixed-experience user populations.

5.4 Experience in a fragile context

The Libyan context sharpens the finding. Where infrastructure is unreliable, the distance between intending to use e-learning and being able to use it is greater than in well-resourced settings (Rhema & Miliszewska, 2012; Ghawail et al., 2021). Experienced employees have learned, through repeated practice, how to work around outages, slow connections and platform limitations. Their attitudes are therefore informed by realistic expectations of what using e-learning involves. Inexperienced employees may hold favourable attitudes without that practical knowledge, which may explain why their attitudes predict intention less strongly. The sample's profile makes the finding more notable. Nearly three-quarters of respondents had at least four years of experience with e-learning, so the lower end of the experience distribution was relatively thin. That a strong moderation effect emerged in a largely experienced sample suggests that the difference between more and less experienced staff may be even larger in institutions where e-learning is newer.

5.5 Direct role of experience

Experience also contributed directly to intention ($f^2 = 0.066$), a small but meaningful effect. Employees with more experience intend to use e-learning more, regardless of their attitude, perhaps because use has already become partly habitual (Limayem et al., 2007). The moderation effect shows, however, that experience matters most not in isolation but in combination with attitude. Positive attitudes and experience reinforce each other: neither alone produces the strongest intentions.

6. Conclusion

Among 365 employees of the University of Tripoli, attitude toward e-learning was the strongest predictor of the intention to use it, and technical experience substantially strengthened that relationship. Favourable attitudes became firm intentions mainly among employees who had built up hands-on experience; among those with little experience, the same attitudes translated only weakly into commitment.

6.1 Theoretical implications

The study contributes to technology acceptance theory in three ways. First, it integrates attitude-strength theory with TAM, showing that the attitude-intention relationship is not constant but depends on how attitudes are formed. Experience-based attitudes are stronger guides to intention. Second, it broadens the role of experience in acceptance research, from a moderator that weakens specific beliefs to one that strengthens attitude-behaviour consistency. Third, it adds evidence for retaining attitude in acceptance models: without attitude in the model, the amplifying role of experience would be invisible. The study also extends acceptance research to university employees, including administrative staff, in a fragile, post-conflict higher education system.

6.2 Practical implications

For university leaders and policymakers in Libya and similar contexts, the findings have direct implications. Pair attitude-building with experience-building. Awareness campaigns and presentations may improve attitudes, but for inexperienced staff they are unlikely to produce commitment on their own. Each campaign should be paired with structured opportunities to use the system. Prioritise hands-on practice over lectures. Training should involve staff completing real tasks on the platform they will use, such as uploading materials, running an online assessment or processing records, so that attitudes are grounded in direct experience. Target support at less experienced staff. Around a quarter of respondents had fewer than four years of experience. This group needs mentoring, peer support and small, early successes that build confidence. Use experienced staff as champions. Experienced employees convert attitudes into intentions most reliably. Deploying them as peer mentors and departmental champions spreads practical know-how and demonstrates what regular use looks like. Protect experience from disruption. Experience accumulates only if use continues. Reliable power, connectivity and technical support are needed so that staff can build uninterrupted experience rather than restarting after each disruption.

6.3 Limitations and future research

Several limitations should be noted. First, the data come from one university in Tripoli, selected partly for stability, so the findings may not transfer directly to other Libyan institutions or regions; multi-site studies are needed. Second, convenience sampling limits generalisation, although the sample

closely resembled the workforce in composition. Third, the cross-sectional design cannot show how the attitude-intention link changes as individuals gain experience; longitudinal or panel designs would provide stronger evidence of the process proposed here. Fourth, experience was measured with self-reported items that include confidence as well as extent of use. Future research should separate objective experience, such as years of use or system logs, from self-efficacy to identify which component drives the moderation. Fifth, all constructs were measured in a single survey, so common method variance cannot be ruled out, although common method variance tends to deflate rather than create interaction effects (Podsakoff et al., 2003; Siemsen et al., 2010). Sixth, intention rather than actual use was the outcome; future studies should test whether experience also strengthens the link between intention and observed behaviour. Finally, multi-group analysis comparing academic and administrative staff, and replication with students, would show whether experience plays the same role across university groups.

6.4 Declarations

Originality and prior dissemination. This manuscript is original, is not under review elsewhere, and is derived from the first author's doctoral thesis, *The impact of perceived usefulness and ease of technology use on the attitude and intention to use among higher education employees in Libya* (Universiti Geomatika Malaysia, 2026). A companion manuscript using the same dataset examines the effects of perceived usefulness and perceived ease of use and the mediating role of attitude; the present paper addresses a different research question, the moderating role of experience. Ethical approval and consent. Data were collected with the permission of the University of Tripoli as part of the first author's doctoral research at IQRA Business School, Universiti Geomatika Malaysia. Participation was voluntary, respondents were informed of the study's purpose, and responses were used only for research purposes. Data availability. The data are available from the corresponding author on reasonable request. Funding. This research received no specific grant from any funding agency. Conflict of interest. The authors declare no conflict of interest.

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Appendix: Items for the baseline constructs

Construct	Code	Item
Perceived usefulness (PU)	PU1	Using the e-learning system improves my job performance.
	PU2	The e-learning system increases my work productivity.
	PU3	The e-learning system enhances my effectiveness in professional tasks.
	PU4	Using the system saves me the time needed to complete my duties.
	PU5	The system provides useful functions that fulfil my responsibilities.
Perceived ease of use (PEOU)	PEOU1	It is easy for me to learn how to use the e-learning platform.
	PEOU2	Interaction with the system is clear and easy to understand.
	PEOU3	I find the system flexible to use according to my needs.
	PEOU4	I can quickly develop my skills to use the system effectively.
	PEOU5	Navigating the system is easy and straightforward.