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The 'First Time User' Experience Conceptual Framework: Onboarding, adaptation and abandonment among Malaysian users

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Abstract
First-time user experience (FTUX) decides whether a newly installed mobile application is kept or abandoned. This study examined how Malaysian smartphone users adapt to new applications and which categories they retain or discard. A synthesis of affective human-computer interaction literature informed an FTUX conceptual framework, and an online survey captured adaptation time and category-level download and uninstall behaviour. Nearly three in five respondents (58.9%) decided within six minutes. Games were the most uninstalled category despite high downloads, whereas banking and social communication apps were retained. Onboarding must therefore deliver emotional and functional value within the first minutes of use.

Keywords: First-Time User Experience (FTUX); Onboarding; Emotional Design; App Abandonment

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1.0 Introduction

Every user who is using an application should have started somewhere. The first minutes with a new mobile application are a transition into an unfamiliar digital environment, in which the newcomer must read the interface, learn its rules and decide whether the effort is worth it. In organisational research this transition is called onboarding: the process through which newcomers are helped to adjust quickly and smoothly to the social and performance demands of a new role (Bauer, 2010). From a human-computer interaction (HCI) perspective, successful onboarding is where a mobile application begins to return its investment, because it turns a download into an engaged and productive user.

The stakes are high in Malaysia, where mobile phone use among individuals reached 99.5% and household smartphone access reached 97.9% in 2024 (Department of Statistics Malaysia, 2025). Near-universal access means that applications compete less for devices than for attention, and the first encounter carries disproportionate weight. Evidence from app-use studies shows that abandonment is front-loaded: a median of 70% of users discontinue health and lifestyle apps within the first 100 days, with the sharpest drop shortly after installation, and poor user experience is among the most consistent reasons (Kidman et al., 2024). When many apps offer similar functions, the first impression often decides the outcome, while a pleasant long-term experience sustains loyalty (Feng & Wei, 2019).

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1.1 Problem statement

Technical faults, unreliability, poor interface design, intrusive requests for personal information and users feeling lost inside an application weaken trust, emotional attachment and perceived usability before a relationship with the product can form (Karapanos et al., 2009; Verkijika & De Wet, 2019). Although practitioners widely agree that developers get only one chance to make a first impression, empirical research on the first-time user experience (FTUX) remains thin and is concentrated in specific domains such as games, finance and health (Barnett et al., 2018; Froehlich et al., 2021; Jakob et al., 2024). Little is known about how long Malaysian users are willing to invest in learning a new app, or which app categories survive that first encounter. Without this knowledge, designers and developers in the local creative and digital industries design onboarding by intuition rather than evidence.

A second gap is theoretical. Existing FTUX studies tend to treat onboarding as an instructional problem, measured by task completion, or as a marketing funnel, measured by conversion. Neither view explains why two equally usable apps can produce very different first impressions. Emotion research offers that explanation, because users appraise a new interface before they understand it, but it has rarely been connected to the onboarding decision itself. This paper addresses both gaps by linking emotional appraisal and emotional design theory to an FTUX framework and by grounding the framework in descriptive evidence from Malaysian users.

1.2 Aim and objectives

This paper aims to understand user preferences and adaptability towards new applications and to construct a conceptual framework for a successful onboarding experience. The objectives are: (i) to synthesise theoretical foundations of emotion and FTUX in HCI into a conceptual framework; (ii) to identify how long Malaysian smartphone users spend adapting to a new application before continuing or uninstalling it; and (iii) to compare the categories of applications that users most often download and most easily uninstall.

2.0 Literature Review

2.1 User experience and the first-time user

User experience (UX) is defined as a person's perceptions and responses resulting from the use or anticipated use of a product, system or service (International Organization for Standardization, 2019). Hassenzahl and Tractinsky (2006) frame UX as a consequence of the user's internal state (predispositions, expectations, needs, motivation and mood), the characteristics of the designed system and the context of interaction. UX is therefore dynamic and context-dependent, which complicates its measurement (Law et al., 2014). Longitudinal work shows that experience changes over time: early use is dominated by orientation, in which learnability and stimulation matter most, before usefulness and personal meaning take over (Karapanos et al., 2009). The FTUX is this orientation phase. It is where potential users evaluate a system quickly and decide whether to participate or abort, and how that initial experience is crafted shapes later behaviour (Drenner et al., 2008). Learnability has long been treated as the most fundamental usability attribute, because a system should let users start getting work done quickly (Nielsen, 1993).

Recent studies sharpen this picture. In mobile games, a framework for evaluating FTUX usability showed that tutorials alone do not guarantee usability (Barnett et al., 2018). For feature-rich financial apps, onboarding flows built on minimalist instruction improved the perceived usability of first-time users, but could not substitute for usable design (Froehlich et al., 2021). Large-scale experiments show that small choice-architecture changes in sequence, colour and wording substantially increase onboarding completion (Reeck et al., 2023), and an analysis of 1,194 visual guides across 114 apps identified walkthroughs, product tours and tooltips as distinct levers of engagement (Lee et al., 2025). Users who skip a tutorial also adhere less to the app afterwards (Jakob et al., 2024).

2.2 Onboarding as an environment-behaviour transition

Viewed through an environment-behaviour lens, a mobile application is a designed environment with its own layout, signage and rules. A first-time user behaves much like a visitor entering an unfamiliar building: they look for orientation cues, test whether the space responds as expected and judge whether it is safe and worthwhile to stay. The expectation-confirmation model explains the outcome of this encounter: when early use confirms what users expected, satisfaction rises and so does the intention to continue (Bhattacherjee, 2001). Adaptation and self-efficacy further strengthen continuance, especially where trust is at stake, as in mobile banking (Nguyen & Dao, 2024). The value sought also differs by category. Perceived usefulness and ease of use weigh more for utilitarian apps, while enjoyment weighs more for hedonic apps (Akdim et al., 2022). The mobile market itself magnifies these pressures, as platform owners such as Apple and Google set the rules under which developers compete (Holzer & Ondrus, 2011).

2.3 Emotion and emotional design in the first encounter

The basic theory of appraisal from the cognitive theory of emotion is adopted in this research. Emotional responses are organised along valence (pleasant to unpleasant) and arousal (calm to excited), which prime approach or avoidance (Lang et al., 1990). Positive emotions broaden attention and the range of actions a person considers (Fredrickson & Branigan, 2005), which, in an FTUX, translates into a willingness to explore. Norman (2004) links these responses to design at three levels: visceral (immediate appearance), behavioural (the pleasure and effectiveness of use) and reflective (meaning and self-image). Aesthetics operate first: a visually appealing smartphone app raised both perceived usability and task performance in an online experiment (Perrig et al., 2023), although the effect of visual aesthetics can fade with repeated use (Sauer & Sonderegger, 2022). Simplicity and positive emotion during the very first interaction also predict whether users recommend an app to others (Verkijika & De Wet, 2019). Table 1 synthesises the studies that informed the framework.

2.4 Conceptual framework

Synthesising these strands, Fig. 1 presents the FTUX conceptual framework. The first encounter unfolds in three stages: pre-use expectation, first impression and onboarding with learning. Each stage is coloured by an emotional appraisal that pushes the user towards approach or avoidance, and the journey ends at a decision point at which the user either continues into a long-term relationship with the app or abandons it. App category, expectation confirmation and prior experience moderate this path.

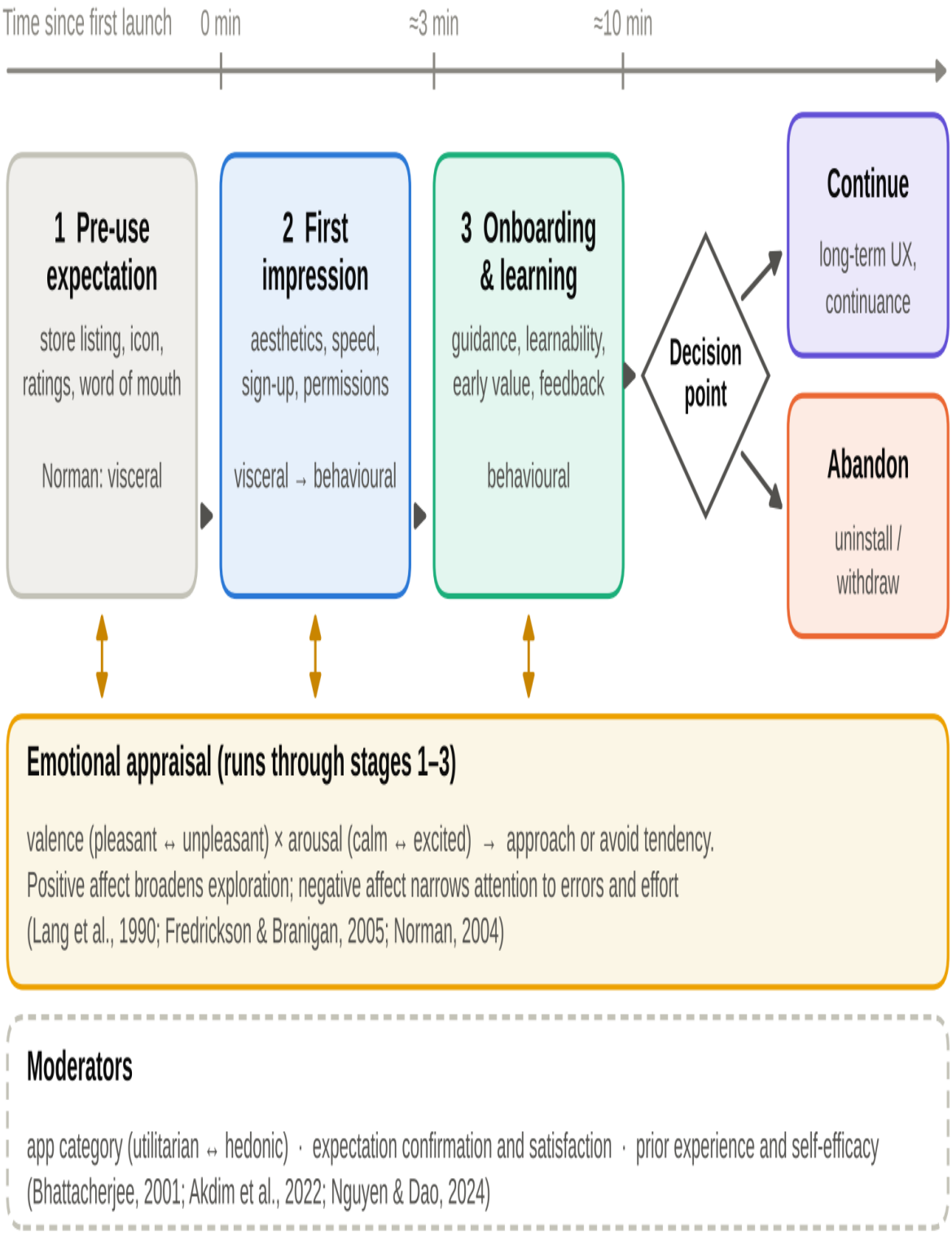


Fig. 1: The 'First Time User' Experience (FTUX) conceptual framework
(Source: Authors, synthesised from Lang et al., 1990; Norman, 2004; Bhattacherjee, 2001; Karapanos et al., 2009)

Table 1. Synthesis of key studies informing the FTUX framework

Study	Focus	Method	Finding relevant to FTUX
Lang et al. (1990)	Emotion and attention	Theoretical review	Valence and arousal prime approach or avoidance
Fredrickson & Branigan (2005)	Positive emotion	Experiment (n = 104)	Positive affect broadens attention and action
Karapanos et al. (2009)	UX over time	Longitudinal field study	Learnability and stimulation dominate early use
Barnett et al. (2018)	Mobile game FTUX	Usability evaluation	Tutorials alone do not guarantee usability
Verkijika & De Wet (2019)	First interaction	Survey, SEM	Simplicity and emotion drive word of mouth
Froehlich et al. (2021)	Finance app onboarding	Interviews, prototype tests	Minimalist onboarding lifts perceived usability
Reeck et al. (2023)	Onboarding choices	Experiments, field test	Choice architecture raises onboarding completion
Kidman et al. (2024)	App abandonment	Scoping review	Abandonment is sharpest soon after installation
Lee et al. (2025)	Visual guides	Crowd-sourced ratings	Guide type and layout shape engagement

(Source: Authors' synthesis)

3.0 Methodology

3.1 Research design

This study combined a narrative literature synthesis with a cross-sectional descriptive survey. The literature synthesis covered foundational and recent peer-reviewed work on emotion in HCI, FTUX, onboarding and app continuance, and was used to construct the framework in Fig. 1 and to frame the survey items. The survey was a preliminary study intended to describe current user behaviour rather than to test hypotheses.

3.2 Instrument

The online questionnaire contained four sections: (i) demographic profile; (ii) frequency of downloading applications; (iii) learning and adaptation, measured as the time a respondent typically spends learning a new application before resuming use or uninstalling it, with items adapted from the learnability attribute of Nielsen's (1993) usability model; and (iv) application categories most often downloaded and most easily uninstalled, presented as 18 store categories with multiple responses permitted.

3.3 Sampling and procedure

The questionnaire was distributed online through social media and social communication applications in 2021 to 150 smartphone users in Malaysia, using convenience sampling. Smartphone ownership was the only inclusion criterion, and participation was voluntary and anonymous. Item-level valid responses ranged from 124 to 129, as not every item was mandatory, percentages are therefore reported on the valid responses for each item, and the category items were answered by 128 respondents.

3.4 Data analysis

Responses were analysed descriptively using frequencies and percentages. For each app category, a net retention score was calculated as the percentage of respondents selecting the category as most downloaded minus the percentage selecting it as most easily uninstalled. A positive score indicates a category that users acquire and keep, while a negative score indicates a category that is uninstalled more often than it is named as a frequent download. Because the sample is non-probabilistic and the analysis descriptive, the findings indicate patterns and do not support population-level inference.

3.5 Methodological limitations

Four limitations are acknowledged. First, convenience sampling through social networks over-represents younger, digitally active and female users. Second, adaptation time was self-reported and recalled across apps in general, not timed during a specific first session, so it reflects perceived rather than observed behaviour. Third, the duration bands were not continuous (for example, no 6–10 minute band was offered), which limits fine-grained interpretation. Fourth, the category items capture stated preferences, not installation logs. These limitations are consistent with the exploratory purpose of the survey and are addressed in the recommendations for future research.

4.0 Findings

4.1 Respondent profile and download behaviour

Table 2 summarises the respondents. Most were female (70.5%) and aged between 18 and 44 years (79.1%), with the 25–34 group the largest (34.1%). Downloading new applications is a periodic rather than daily activity: 43.5% download a new application about every three months, while only 12.1% do so weekly or daily. Each new download is therefore an infrequent event, which raises the cost of a poor first experience. The age profile also shows that one in seven respondents (14.9%) were aged 45 and above, a group for whom unfamiliar interface conventions can make the first encounter more demanding.

Table 2. Respondent profile and download frequency

Variable	Category	%	Variable	Category	%
Gender	Female / Male	70.5 / 29.5	Download	Every three months	43.5
Age (years)	13–17	6.0	frequency	Monthly	22.6
	18–24	22.5		Fortnightly	11.3
	25–34	34.1		Annually	10.5
	35–44	22.5		Weekly	8.1
	45–54 / 55–64	10.9 / 4.0		Daily	4.0

(Source: Survey data)

4.2 Adaptation window

Fig. 2 shows how long respondents spend learning a new application before deciding to continue or uninstall it. The largest groups decided within 4–5 minutes (20.2%) or persisted beyond 10 minutes (20.2%). Cumulatively, 29.4% decided within three minutes and 58.9% within six minutes. Only a third (33.1%) were prepared to invest more than 10 minutes or up to a day. For most users, the FTUX is therefore a window of a few minutes.

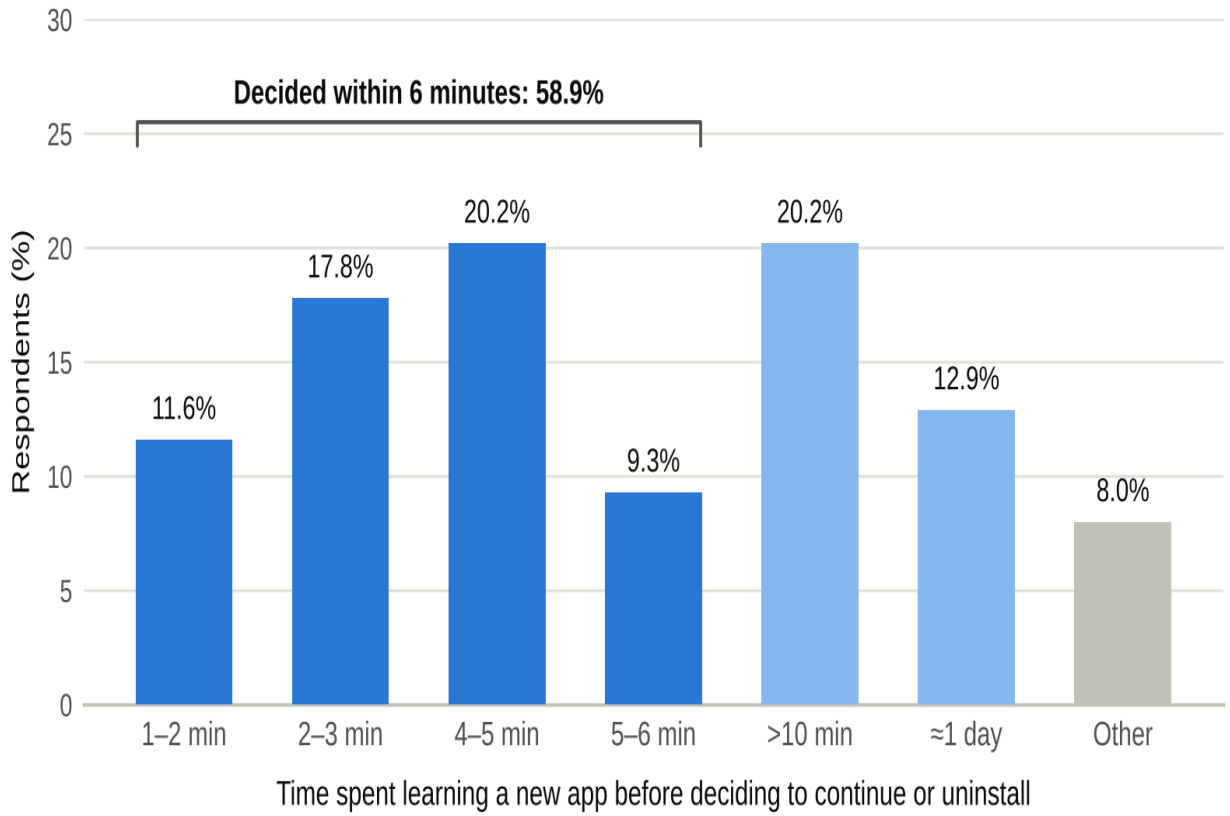


Fig. 2: Time spent learning a new application before continuing or uninstalling it
(Source: Survey data; valid responses per item)

4.3 Categories downloaded and uninstalled

Fig. 3 compares, for the same 128 respondents, the categories most often downloaded with those most easily uninstalled. E-commerce and shopping (63.3%), social communication (54.7%) and games (52.3%) were the most downloaded categories. Games, however, were also by far the most easily uninstalled category (64.1%), giving them the lowest net retention score (−11.7 percentage points). Sports (−3.9) and news (−0.8) also recorded negative scores. In contrast, social communication (+45.3), e-commerce (+43.8) and banking (+32.8) were acquired and kept, with banking uninstalled by only 6.3% of respondents.

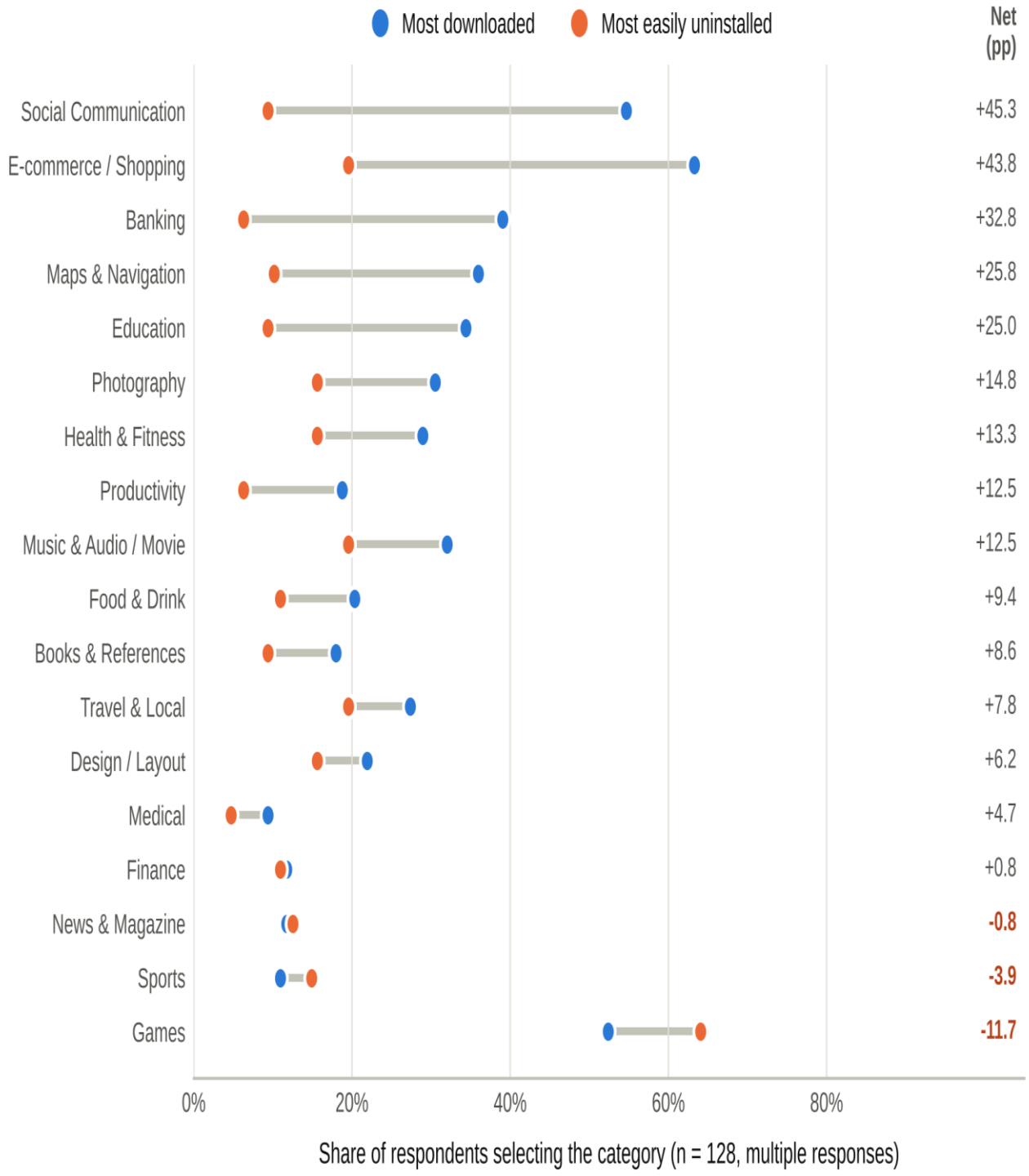


Fig. 3: Most downloaded versus most easily uninstalled application categories, with net retention score
(Source: Survey data, n = 128; multiple responses permitted)

5.0 Discussion

5.1 The first minutes decide

The adaptation window found here supports the framework's central claim that the decision point arrives early. With nearly three in five users deciding within six minutes, onboarding cannot postpone value until after registration, permissions and tutorials. This mirrors the front-loaded abandonment curve reported across app domains (Kidman et al., 2024) and the dominance of learnability in the orientation phase of UX (Karapanos et al., 2009). In appraisal terms, early friction produces unpleasant, high-arousal states that narrow attention

to effort and errors, whereas an early sense of progress produces the positive affect that broadens exploration (Fredrickson & Branigan, 2005; Lang et al., 1990). The one in five users who persist beyond ten minutes show that patience exists, but designers cannot rely on it. Mapped onto Fig. 1, the evidence suggests that stages two and three, first impression and onboarding, are compressed into the same few minutes rather than following one another at leisure. A user who is still reading a welcome carousel at minute four is already approaching the decision point, so the emotional tone of the earliest screens and the speed at which they lead to a meaningful action cannot be designed separately.

5.2 Hedonic promise versus utilitarian necessity

The category results reveal a paradox. Games are among the most downloaded categories yet the most easily discarded. Hedonic apps must deliver enjoyment immediately (Akdim et al., 2022); when the first session fails to do so, there is little functional dependency to keep the app installed, which echoes the long tail of disappointing game FTUEs (Barnett et al., 2018). Banking and social communication apps behave differently. They are embedded in daily obligations and relationships, so users tolerate a steeper learning curve, and continuance is sustained by usefulness, adaptation and trust (Nguyen & Dao, 2024). In environment-behaviour terms, utilitarian apps are places users must visit, whereas hedonic apps are places users choose to visit, and a choice can be withdrawn after a single unsatisfying visit.

The middle of Fig. 3 is equally informative. Sports and news apps, which recorded negative or near-zero net scores, depend on content that is easily available elsewhere, so a weak first session gives users little reason to keep a dedicated app. Travel, music and photography apps are downloaded often but also uninstalled by 16–20% of users, which is consistent with situational use: they are installed for a trip, an event or a project and removed afterwards. For these categories, the onboarding challenge is not only to impress on first use but to give users a reason to return after the triggering situation has passed.

5.3 Implications for onboarding design

Three implications follow. First, onboarding should be designed for a three-to-six-minute budget, showing the core value before asking for registration or permissions, as minimalist instruction and integrated choices both increase completion (Froehlich et al., 2021; Reeck et al., 2023). Second, the visceral layer matters on day one: aesthetics raise perceived usability at first contact (Perrig et al., 2023), but because their effect may fade (Sauer & Sonderegger, 2022), they must be backed by behavioural quality. Third, onboarding should be tailored to category: hedonic apps need an early moment of delight, whereas utilitarian apps need early confirmation of usefulness and trust. Visual guides such as walkthroughs and tooltips should be selected deliberately rather than by habit (Lee et al., 2025).

5.4 Implications beyond the present study

The findings also matter outside app development. For design education, onboarding is a motion and sequencing problem as much as a layout problem: transitions, micro-interactions and animated walkthroughs are the means by which an interface explains itself within a few minutes, which argues for teaching onboarding explicitly in creative motion design and UI/UX curricula. For small and medium enterprises entering the app market, the evidence suggests that investment in the first session may yield more than investment in acquisition, because a download that is lost within minutes has no return. For research on environment and behaviour, the study shows that concepts such as orientation, wayfinding and place attachment can be transferred to digital environments, in which the ‘building’ is a sequence of screens and the decision to stay is made with a single uninstall gesture.

6.0 Conclusion & Recommendations

This study set out to understand how Malaysian smartphone users adapt to new applications and to construct a conceptual framework for successful onboarding. The FTUX framework positions the first encounter as a short, emotionally charged journey from expectation to a decision point, moderated by app category and expectation confirmation. The survey shows that this decision is made within minutes for most users, and that hedonic categories such as games are acquired readily but discarded quickly, while utilitarian categories such as banking are retained. Looking back, the study’s main contribution is to connect two literatures that have developed separately, affective HCI and onboarding design, and to show with local data where the critical moment of the user journey lies. The framework is deliberately simple so that it can be used by practitioners as a design checklist and by researchers as a set of testable relationships.

For practice, designers, developers and creative industry players are recommended to (i) treat the first six minutes as the critical onboarding budget; (ii) show core value before demanding registration or personal data; (iii) pair visual appeal with immediate behavioural competence; and (iv) design category-specific onboarding that delivers delight for hedonic apps and confirmed usefulness for utilitarian apps. These recommendations support Malaysia’s digital economy agenda and Sustainable Development Goal 9 on industry, innovation and infrastructure, particularly for small and medium enterprises that cannot afford high user acquisition costs.

The study has limitations. The sample was a non-probabilistic online sample of Malaysian smartphone users with a female majority, the data were self-reported, and the analysis was descriptive. Future research should test the FTUX framework through structural modelling, observe real first sessions using think-aloud protocols, eye tracking or in-app analytics, measure emotional responses directly with instruments such as AttrakDiff or the UX Curve (Feng & Wei, 2019), and extend the work to specific groups, including older adults, for whom the cost of a failed first encounter may be higher.

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Paper Contribution to Related Field of Study

This paper contributes an FTUX conceptual framework that links emotional appraisal and emotional design theory to the onboarding decision point, together with Malaysian evidence on adaptation time and category-level retention. It informs HCI, UX design, creative motion design and the mobile application industry.

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