Heliyon 9 (2023) e16885

Contents lists available at ScienceDirect

Heliyon

journal homepage: www.cell.com/heliyon

From FITT to FISTT: The task-skills fit before the introduction of assistive, digital health technologies☆

Barimwotubiri (Billy) Ruyobeza [a,*], Sara S. (Saartjie) Grobbelaar [b], Adele Botha [c]

[a] Department of Industrial Engineering, University of Stellenbosch, South Africa
[b] Department of Industrial Engineering, University of Stellenbosch University, South Africa AND DSI-NRF Centre of Excellence in Scientometrics and Science, Technology and Innovation Policy (SciSTIP), Stellenbosch University, Stellenbosch, South Africa
[c] Department of Industrial Engineering, University of Stellenbosch AND CSIR Next Generation Enterprises and Institutions, South Africa

ARTICLE INFO

Keywords:
Fit
Task
Skill
Assistive
Digital
Health
Technology

ABSTRACT

Objective: To enhance the predictive power of the Fit between Individuals, Task and Technology (FITT) framework in mobile, individual consumer settings by restructuring *the individual-task fit* to prominently emphasise *the task-skills fit*.
Design: A mixed study involving a quantitative survey of 679 potential patients (adopters) and a qualitative content analysis of ten semi-structured interviews with clinic assistants.
Setting: For the survey, three combined random samples of potential patients from Atteridgeville, Bapong and Garankuwa (South Africa). Ten Unjani clinic assistants were also interviewed about their tasks, skills, and related properties and attributes using a semi-structured interview guide.
Participants: Participants in the survey were potential patients over 18 years of age in the three sampled locations. In the qualitative study, interviewed participants were employed as clinic assistants in ten clinics within the Unjani Clinic Network.
Main outcome measures: in the quantitative study, the statistical significance of the relationships between smartphone experience and health motivation on the one hand and the adopter's perceived self-efficacy on the other. In the qualitative study, the extent to which task properties, context, and the adopters' levels of education and training affect their perceived self-efficacy.
Findings: There is a significant relationship between smartphone experience and perceived self-efficacy and a moderately significant relationship between health motivation and perceived self-efficacy. Furthermore, task properties, task context, and an adopter's level of education and training considerably influence their perceived self-efficacy on a given future assistive digital health technology (ADHT).
Conclusion: Extending the FITT to the FISTT framework to explicitly include the *task-skills* fit may improve the explanatory and predictive power of the traditional FITT framework in mobile individual consumer settings.

☆ An ethical clearance application was submitted to Stellenbosch University's Research and Ethics Committee (SUREC). SUREC reviewed and approved the research protocol and subsequently granted ethical approval for field research to go ahead under project number: ING-2021-22,527.

* Corresponding author.
E-mail addresses: ruyobeza@gmail.com (B.(B. Ruyobeza), ssgrobbelaar@sun.ac.za (S.S.(S. Grobbelaar).

https://doi.org/10.1016/j.heliyon.2023.e16885
Received 2 May 2023; Received in revised form 31 May 2023; Accepted 31 May 2023
Available online 9 June 2023

1. Introduction

One of the most widely applied technology adoption frameworks is *the fit between individual, task and technology* (FITT). The Task-Technology Fit (TTF) theory is a predecessor of the FITT framework. It posited that the successful adoption of a given technology depends on its suitability to the task's characteristics, such as complexity, organisation and routineness. Furthermore, the theory explained that the extent to which task requirements match the technology's functionality and features would significantly determine its subsequent adoption or non-adoption [1]. The FITT framework is built on the understanding that the greater the optimal fit or congruency between new technology, its potential users and the clinical tasks and processes it must support and within which it must be integrated, the greater its potential for subsequent adoption and use [2]. However, leading scholars on FITT, such as Goodhue and Thompson [3], Venkatesh and Morris [4], and Tarafdar, Tu, and Ragu-Nathan [5], do not directly or explicitly address the concept of *agency* within the FITT framework.

Therefore, this research explored the FITT's individual-task fit concept in predicting the potential for adopting prospective assistive digital health technologies (ADHTs). The widespread adoption and use of mobile devices have enabled access to new consumers, technology markets and more efficient and cost-effective service and care delivery models [6]. This agency-driven phenomenon extends to healthcare service delivery models involving ADHTs.

In particular, remote patient management tools and systems (RPMTS) as a type of ADHT will increasingly offer potential patients convenient access to promotional and primary healthcare services away from health care facilities. Thus, traditional technology adoption frameworks often applied in organisational settings, such as FITT, ought to be revised in the context of individual mobile consumer settings in which the ability, willingness and freedom of individuals to take independent and intentional actions (agency) is vital. For example, It can be argued that the FITT's *task* component is easier to define and measure objectively than its *individual* counterpart component, which includes subjective and dynamic factors that are more difficult to define and measure, at least from a technology design and development perspective. Furthermore, both the TTF and FITT frameworks have mainly been applied as explanatory post-implementation assessment or evaluation frameworks in organisational settings rather than predictive theories of adoption and scaling in consumer settings [7–9]. Moreover, because both of these frameworks aim to improve employee performance in organisational settings, they often fail to consider the impact of introducing new technology within the existing interaction between a user's skills (technology related or not), and their tasks. The above introduction ultimately improves or disturbs the previous *fit* or equilibrium between that individual and their current task(s). On the one hand, FITT scholars seem to have assumed that users necessarily love to carry out their tasks (motivation) and have a uniform, agreed-upon understanding of how to carry them out before introducing new technology. However, this may not always be the case.

On the other hand, an individual's future skills on a prospective technology, given their general education levels, training and experience, has not received adequate attention within the FITT framework. As such, the FITT framework may fail to adequately capture the pre-existing, real or perceived 'fit' or lack thereof between a user's current *tasks* on the one hand and their future technology *skills* level on the other. It may thus be difficult and challenging to rely on the FITT framework to gauge the potential success for the future adoption and use of ADHTs and to grasp how the new technology ought to be designed and deployed to enhance that fit or overcome the lack of it [10,11]. As scholars note, introducing new technology is often accompanied by tasks, processes and sometimes, organisational changes, which may lead to user dissatisfaction. This dissatisfaction is, rightly or wrongly, often blamed on the new technology rather than on the status of the pre-existing user's task-skills relationship [12]. This article unpacks the Individual-task link of the FITT framework and suggests that in the context of ADHTs, the traditional FITT's predictive power could be enhanced by replacing the 'individual' leg of the framework with 'skills' but keeping the 'individual' in the framework (FISTT framework) behind task-skills link. In addition, it further suggests that the 'fit' between the current tasks and future skills be explored ahead of technology development (i.e. the fit between the individual, skill and task – FIST concept) based on the future adopters' current levels of education, training and experience on existing technologies relating to contemplated, future technologies.

In the next section (section 2), the definitions of the concepts used in the study as well as the proposed predictive FIST concept, are introduced. Section three then lays down the methodology followed to collect and analyse relevant data to evaluate the proposed predictive concept, and section four presents the study's findings. Section five discusses the limitation and future research directions. The article is concluded in section 6.

2. Background and FIST as a precursor to FITT

As previously stated, this article builds on the traditional FITT's proposition that the potential for adopting new technology is enhanced when it is designed to regulate and mediate the pre-existing relationship between the target users and their current task or tasks [13]. However, we also argue that new ADHTs, such as remote patient management tools and systems (RPMTS), are more likely to be adopted if they enhance, complement or extend users' existing skills level in carrying out the target tasks [14]. Therefore, since both of the above interactions, one between the target users and their current tasks and the other between them and their present and potential skills on future ADHTs are available before the introduction of ADHT, the research question addressed in this study is the following: ***Could the fit between current tasks and skills on existing (ADHT-related) technology, predict users' perceived self-efficacy***? We argue that these two relationships could be significant sources of information to gauge the potential for adopting a given type of ADHT, such as RPMTS. Furthermore, in the context of pre-existing or legacy technological tools or systems, these relationships' perceived strengths and weaknesses in *facilitating* the relevant target task or *complementing* the user's current skills could be instrumental in conceptualising and designing a new ADHT or redesigning an existing one. We acknowledge that health technology adoption and use occur in a given setting and hence, the person-environment fit (PE), which may include the subconstruct of person-organisation fit (PO) is equally relevant [15].

However, the main preoccupation here is to assess the potential for future adoption and setting realistic technology adoption and diffusion expectations [16]. This study accomplishes the above aim by relying on the well-known concept of *person-task fit (PT)*, derived from organisational psychology and behaviour fields. The person-task fit is here understood to mean the congruency or compatibility between an individual's skills or competencies and the job requirements [17]. The literature identifies two classes of person-task fit. The first one is the *demand-ability fit*, which focuses on whether or not there exist adequate employees' skills and abilities to meet job requirements. We adopt Hua and Liu's suggestion that task requirements and individual skills play a central role in ICT adoption. Therefore, this study focused on the construct of *demand-ability fit*. The key variables usually considered in this context are vocational choice, motivation, job stress, and job satisfaction [14]. Since vocation choice is reflected in job motivation and job stress and satisfaction reflect the job context, this study consolidated them into job motivation and context, respectively. The study does not explore the second class of person-task fit, which is concerned with whether or not jobs are available to meet employees' aspirations and is referred to as the *need-supply fit* [18]. Besides the person-task fit concept, however, there has also been growing interest in the *person-skills* fit concept within the field of *the future of work*.

Skills in this context are understood to refer to a set of capabilities that individuals must have to perform a given task or job to the best possible level. Literature on the future of work characterises the *Person-Skills (P–S) fit* as the "skills level and relevancy associated with jobs in future organisations" [19]. Therefore, in this study, we define the concept of *Task-Skills fit (T-S)* as the degree of correspondence or congruency between the task requirements and the individual capabilities or skills required to efficiently carry that task out. Furthermore, we argue that the *perceived self-efficacy* at the individual level (i.e. consumer settings) and *competence* in organisational settings reflect this degree of correspondence between task and skill. Fig. 1 below depicts the proposed FIST construct or concept.

3. Materials and methods

First, the FIST concept suggests a pre-existing relationship between an individual and their present and future skills, just as the classic FITT framework suggests one, between an individual and their task or with technology. The main contribution here is the proposal to examine an individual's relationship with skills at the same abstraction level as that posited between him and the target task or technology. Furthermore, we argue that this relationship is primarily defined by the individual's general level of education, training, and experience.

Secondly, the concept maintains the classic individual-task fit as held within the FITT framework but emphasises *detailed* task specification prior to ADHT's design and development. As stated previously, the study also consolidates the individual-related components of the FITT framework, such as job satisfaction and stress, with other relevant task-related variables (such as *task goal*, *mental* and *physical workload*, or *performance steps* and *activities*) into *task specification*. Furthermore, we maintain that task specifications must match the attributes of the target adopter, particularly the adopter's potential for future skills on ADHT. Finally, *vocational choice*, which is less influential outside of an organisational context, together with the *task environment*, are consolidated into *the task context* of both the individual and the target task. The proposed concept of the *task-skills fit* is analysed with the above assumptions. Therefore, the FIST-related hypotheses examined are that prior to the introduction of new ADHT in general and RPMTS in particular.

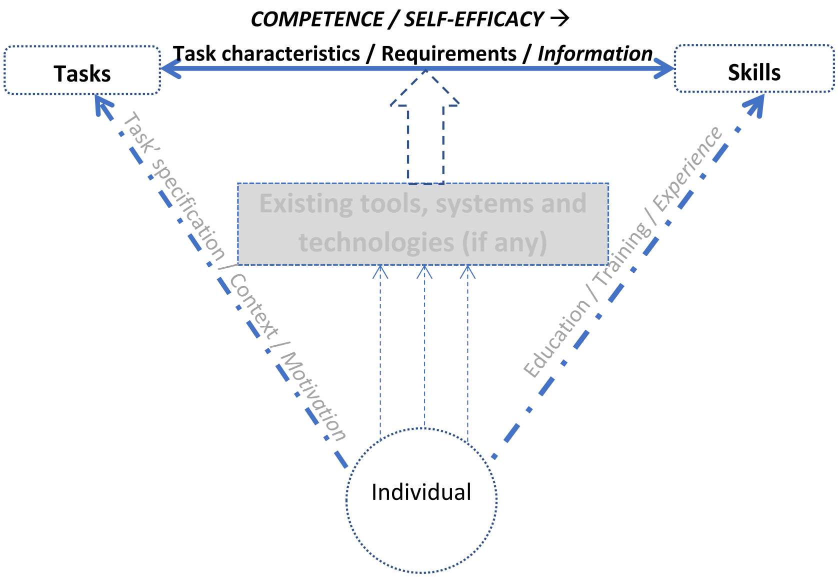

Fig. 1. FIST concept for the task-skills fit prior to introducing a new RPMTS.

Table 1
Codebook for Survey data and semi-structured interviews.

Variable of interest	Definition	Reference
Task specification	*A detailed description of the target task properties most relevant to the user (e.g. task goal, steps to be followed or required mental and physical effort)*	[20,21]
Context	*The setting and conditions within, which the target task is performed, including its timing and spaces. This also encompasses the user's options and choices in performing the task (vocational or otherwise)*	[22,23]
Motivation	*The user's reason for performing the target health-related task (the motive or anticipated rewards)*	[24–26]
Education	*Levels of systematic learning in formal schools, colleges or universities*	[27]
Training	*Knowledge, skills and attitudes necessary to perform a given, specific task (using a given app to achieve the desired goal) that is imparted.*	[28]
Experience	*The previous performance of the same or similar task (e.g. downloading apps & installing them on a smartphone)*	[29,30]
Task characteristics	*The innate features of the task (e.g. task difficulty, routineness, complexity, interdependence, or variety)*	[31]
Task requirements	*The abilities, behaviours, and materials required to perform the task (e.g. literacy, data (airtime), access to a smartphone).*	[32]
Task information	*Details, particulars, and facts needed to perform the target task (e.g. an email, telephone number or web address)*	[33]

- The potential adopters' RPMTS-related *skills* can be partly predicted by their levels of education, training, and experience (especially with smartphones and similar apps),
- The potential adopters' future willingness to perform the target task can be estimated by analysing the task specifications, the target adopters' (job and health) motivation, and the context in which the target adopters are expected to perform the *target task* (i.e. use RPMTS) and
- The higher the estimated skills level and the greater the willingness to perform the task (motivation), the greater the target adopters' competence or perceived self-efficacy will be.

The codebook resulting from the above FIST construct, containing the definition of each of the variables used to collect and analyse data, is provided in Table 1 below.

The researchers aimed to collect data to evaluate the proposition that the existing task-skills fit could be indicative of the future task-skills fit and thus help predict future technology adoption success or failure [34–36]. The first part of the study examined the three task-skill fit-related propositions statistically. The test was performed on the data collected previously from 679 potential patients. The above survey formed part of a more extensive study conducted in Atteridgeville, Bapong, and Ga-Rankuwa (South Africa) to assess the intention-expectation gap as well as localised sociotechnical norms and imaginaries. However, this test was limited to only three variables: smartphone experience or familiarity, health motivation, and perceived self-efficacy in using smartphones for health-related purposes. Thus, the following propositions were statistically tested in the first part of the study.

1. There is a significant positive association between potential patients' experience with smartphones and their perceived self-efficacy (to use it for health-related purposes),
2. There is some positive association between potential patients' level of health motivation and their perceived self-efficacy, and
3. If propositions 1 and 2 are accurate, then smartphone experience and health motivation should predict a significant proportion of perceived self-efficacy.

Appendices 1 to 3 present the questionnaire sections relevant to this statistical evaluation. In addition, ten semi-structured interviews with clinic assistants were conducted since the above statistical analysis had been limited to the potential users' *smartphone experience* and *health motivation* as predictors of the perceived ADHT-related self-efficacy. The ten semi-structured interviews were conducted to complement the statistical study and examined, in addition, other relevant variables of the task-skills fit construct, such as education levels, motivation and training. An interview guide containing 35 questions was designed based on the proposed task skills fit concept. The interview guide is available in Appendix 4.

3.1. Data collection

Data were collected in two instalments: First, between November 2021 and June 2022, as part of a larger survey, 679 randomly selected potential patients responded to 16 questions related to the FIST concept, as previously indicated. The self-completion questionnaire instrument used for the survey included five questions that estimated RPMTS-related perceived self-efficacy. Moreover, the questionnaire included seven questions that assessed users' experience with smartphone use and four questions gauging health motivation to use a smartphone to access health information and services. Secondly, as previously stated, semi-structured interviews were conducted with ten clinic assistants (CAs) over Microsoft teams, Zoom, and Google meet, between April and June 2022. The participants were employed as CAs in various UNJANI Clinics and were selected based on availability (*convenience*). However, where possible, care was taken to ensure provincial representativeness. No respondents from the Northern and Western Cape were interviewed. This is because Unjani had one or two clinics in each of these provinces at the time of the study. Two interviews were

Table 2
Data collection statistics.

Data collection statistics	Total	Atteridgeville	Bapong	Ga-Rankuwa
Descriptive statistic				
Sampled and visited Dwelling units	2400	800	800	800
Not at home (first visit)	927	280	327	320
Still not at home (second visit)	**613**	**169**	**196**	**248**
Has medical aid (sees no value in the study)	18	9	1	8
Does not want to participate (no reason given)	84	14	26	44
Expressed intention to participate	**1685**	**609**	**577**	**499**
Smartphone Ownership	**303**	**74**	**119**	**110**
Basic, Entry level phone ownership	156	77	28	51
Has no Phone (whatsoever)	334	98	135	101
Believes he/she can access a phone	167	21	115	31
Online Completion (Incomplete forms)	148 (41)	57 (17)	45 (9)	46 (15)
Paper-based completion (incomplete forms)	645 (73)	192 (27)	237 (23)	216 (23)
All Responses Received	**793**	**249**	**282**	**262**
Received complete Response	**679**	**203**	**263**	**213**

conducted in Gauteng, North West and Limpopo. One interview was conducted in each of the remaining four provinces.+

3.2. Description of participants

For the first part of data collection, a random sample of 800 dwelling units was drawn from each of the three target locations. A total of 679 participants (S1: 203, S2: 263 and S3:213) responded to the survey. Data collection statistics relating to the survey are displayed in Table 2 below.

Furthermore, as previously discussed, ten respondents accepted the invitation for the semi-structured interviews. Five of the respondents were between the ages of 18–30, and four were between the age of 31–50. One respondent is over 50 years of age. Three respondents had been clinic assistants for about two years, and two had worked in clinic assistant positions for at least 12 months. Two participants had been in the clinic assistant positions for more than four years, and two had practised as clinic assistants for less than a year. Except for one clinic assistant registered with the Pharmacy Council of South Africa as a *post-basic pharmacist assistant*, the rest were not registered with any professional body.

In general, all clinic assistants speak at least two languages, one being the predominant language in the clinic's area and the other being their mother tongue. Except for one clinic assistant who had not completed a matriculation qualification, all other CAs had completed some higher education in college (SHE). In addition, two had completed a bachelor's degree (BAC), and one had completed a diploma qualification (NDip), all in non-healthcare-related fields. Table 3 below provides basic details about the ten interviewees.

3.3. Data analysis

In the first part of the study, Spearman correlation, regression analysis and Chi-square tests were conducted on the collected data to test the previously stated hypotheses. Correlation was first used to establish if a relationship did indeed exists between the relevant variables. Then a linear regression analysis was performed to examine the influence of coded health motivation and smartphone experience *on* coded perceived *Self-Efficacy*. Thereafter, an analysis of variance (ANOVA) was conducted to test whether the obtained result was significantly different from zero (influence). Finally, the examined variables were re-coded into three categories: High, medium, and low. Next, a Chi-Square test was conducted to compare the observed contingency table to the one expected if there was no relationship between the variable of interest (no influence). Finally, for the third hypothesis, multiple linear regression analysis was performed to assess the combined influence of smartphone experience and health motivation *on* perceived *self-efficacy*. Fig. 2 below provides the framework that indicates how the analysis was undertaken in part 1 of the study.

In the second part of the study, directed content analysis was used to attempt to grasp how variables posited to influence a person's perceived self-efficacy emanated from the degree of fit between their target task and skills level in carrying out the relevant task.

Directed content analysis is one of the three approaches applied to interpret the meanings of a text, audio, and other collected data formats. In contrast to conventional and summative methods, which derive their codes from the collected data, directed content analysis derives its coding categories from an existing framework or theory [37]. One of the highlighted goals of directed content analysis is to conceptually extend an existing theoretical framework by relying on its constructs or concepts to predict the variables of interest and the relationships among them, thus providing the initial coding categories [38]. Directed content analysis has previously been applied in healthcare to address practice-oriented challenges such as translating research results into routine care [39] describing barriers and facilitators to care models [40] and developing conceptual frameworks based on patient perspectives [41].

In this study, the researchers applied a deductive approach to analyse the ten semi-structured interviews with clinic assistants (CAs) from Unjani clinics. Data analysis and interpretation of the above semi-structured interviews were based on categories and themes from the FIST concept that the researchers devised before data collection [37]. The purpose was to establish whether there would be significant benefits in further expanding the concept of individual-task fit within the FITT framework to firmly encompass the individual's skills and related factors [42,43]. Therefore, *directed content analysis* was considered a viable data analysis method under these circumstances. Furthermore, given that the interviews were conducted in an organisational setting, task specifications, characteristics, information, and requirements were consolidated into one variable called *job perspective*.

The aim was to identify the most liked, disliked, challenging or complex tasks within a CA's job to understand how participants may respond to a potential ADHT that may automate each identified group of tasks (*e.g.* liked or disliked tasks). This becomes particularly important in assessing the future potential uptake and use of new ADHTs such as RPMTS *before* their conceptual design and development, in that the exercise sheds light on tasks *or* skills the new technology should be designed to facilitate or enhance, respectively.

To implement content analysis, Assarroudi et al. recommended 16 comprehensive steps to follow [38]. However, the researchers preferred a simpler, shorter, and more comprehensive eight-step approach proposed by Delve based on three approaches to qualitative content analysis by Hsieh and Shannon [44,45]. These eight steps include.

Table 3
Basic description of interviewees.

	Description of participants									
Interviewees	#1	#2	#3	#4	#5	#6	#7	#8	#9	#10
Age group	51–70	31–50	18–30	31–50	18–30	31–50	31–50	18–30	18–30	18–30
Education level	Std 9	SHE	BAC	SHE	SHE	SHE	SHE	SHE	BAC	Ndip
Experience (months)	48	22	6	17	12	14	24	8	30	60

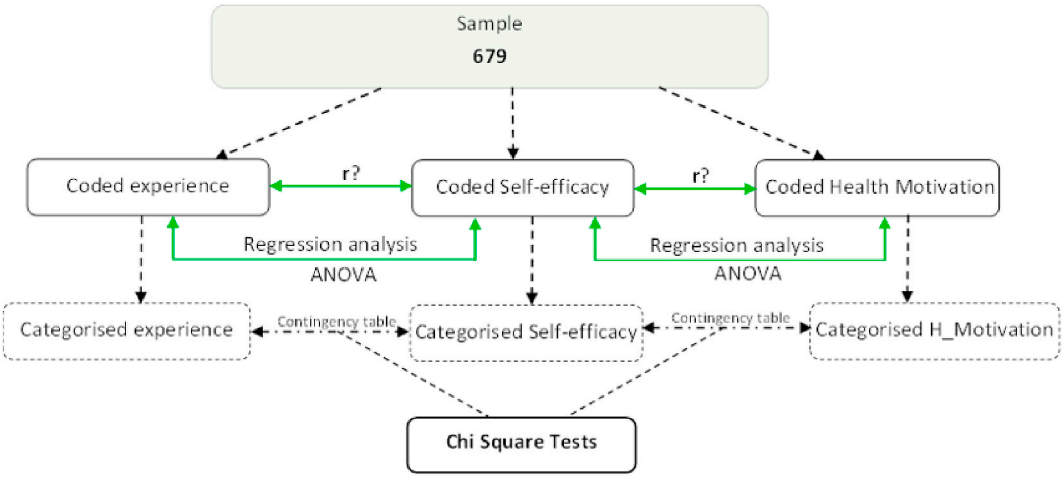

Fig. 2. Fist analysis framework.

1. Identifying key concepts from the existing research framework to turn into initial codes. In this study, the researchers identified nine key codes for developing semi-structured interview questions in this step.
2. Creating a codebook with definitions for each code based on the framework. A codebook was developed based on the existing literature on the person-task, and person-skills fit derived from previous theories of person-job and person-organisation fit (see Table 1).
3. Gathering data to probe the concepts in the framework. Ten 30–45 min long semi-structured interviews were conducted. All ten interviews were coded and transcribed.
4. Coding passages in the transcript. An excel template was used to code all passages in the transcripts for each participant and for all participants on each of the seven variables (self-efficacy, *motivation, experience, context, education, training, and job perspective.*)
5. Assessing data that fit within the initial code frame.
6. Evaluating data that didn't fit within the initial code frame.
7. Recording incidences and frequency and
8. Writing the narrative.

4. Analysis and results

4.1. Statistical analysis: smartphone experience and self-efficacy

Scores on the seven components of users' experience were averaged to establish whether or not a positive relationship existed between users' experience and self-efficacy. Similarly, those of the five components of self-efficacy were also averaged.

Thereafter, a non-parametric Spearman correlation was performed to test whether there was an association between the coded average experience and coded self-efficacy. The results can be observed in Table 4 below.

The Spearman correlation result showed a significant association between the average coded experience and coded self-efficacy, r (677) = 0.74, p = <.001. There is a high positive correlation between the variables *coded experience* and *coded self-efficacy* with r = 0.74. Thus, this sample has a very high positive association between average coded *experience* and coded *self-efficacy*. A parametric Spearman correlation test yielded an even higher correlation, r = 0.77. In addition, to examine the influence of the average coded experience on the coded self-efficacy, the researchers also performed a linear regression analysis after testing for conditions that must be met on the DATA*tab* software.

The regression model showed that the average coded *experience* explained 58.67% of the variance in the average coded *self-efficacy*. Furthermore, an analysis of variance (ANOVA) was performed to test whether the above-explained percentage was significantly different from zero. Within the present sample data, it was found that the effect was significantly different from zero, F = 961.01, p = <.001, R2 = 0.59. The following regression model was obtained: **Coded AvSelf-E = -1.85 + (0.72 x Coded Avexp)**. The above model indicates that if the value of the variable *coded average experience* changes by one unit, the value of the variable *coded average self-*

Table 4
Spearman correlation between experience and self-efficacy.

Null hypothesis	Alternative hypothesis	
There is no association between Coded Avexp and Coded Self-E	There is no association between Coded Avexp and Coded Self-E	
	r	**p(2-talled)**
Coded Averxp and Coded Self-E	**0.74**	**<.001**

efficacy changes by 0.72.

Finally, the variables average *coded experience* and *coded self-efficacy* were each categorised into three levels: *low*, *medium*, and *high*. As shown in Appendix 2, the variable smartphone experience scores varied from 1 to 5. Scores below *2* were categorised as *low experience* level, those between 2 and 3 constituted a *medium experience* level, and those above *3* were deemed *high experience* level.

For coded self-efficacy, scores between −2 and 0 constituted *low self-efficacy*, those above 1 constituted *high self-efficacy*, and those between 0 and 1 made up *medium self-efficacy*. With the above categories, contingency tables for both the observed frequency counts and the expected table (if there were no relationship between the two variables) were obtained, and a Chi^2 test was then performed between categorised *self-efficacy* and categorised *Smartphone_Experience*. No expected cell frequencies were less than 5. The results are displayed in Fig. 3 and Tables 5–6 below.

Results show that there was a statistically significant relationship between categorised SP_experience and categorised self-efficacy, χ^2 (4) = 306.19, p = <.001, Cramér's V = 0.47.

Chi^2	306.19
df	4
p	<.001

The above exercise resulted in a p-value of < .001, which is lower than the defined significance level of 5%. The Chi2 test is, therefore, significant, and the possibility that there is no relationship between the two variables is rejected. Fig. 3 and Table 5 show the distribution of categorised *smartphone experience* in relation to categorised *self-efficacy*. It can generally be observed that the higher the smartphone experience, the higher the perceived self-efficacy.

4.2. *Statistical analysis: health motivation and self-efficacy*

Similarly, a potential positive relationship between users' health motivation and self-efficacy was also investigated. Before conducting the analysis, scores on the four users' health motivation items were averaged. Thereafter, a non-parametric Spearman correlation was performed to test whether there was an association between the coded average *health motivation* and coded *self-efficacy*. The results can be observed in Table 7.

The result of the Spearman correlation shows an association between coded *health motivation* and coded *self-efficacy*, r (677) = 0.42, p = <.001. However, this is a medium, positive correlation between the variables coded *health motivation* and coded *self-efficacy* with r = 0.42.

Thus, this sample displays a moderate, positive association between coded *health motivation* and coded *self-efficacy*. The above relationship was further investigated by examining the actual influence of the coded average *health motivation on* coded *self-efficacy*.

After testing for conditions that must be met for linear regression on the DATA*tab* software, the test was performed. The regression model showed that coded *health motivation* explained 15.48% of the variance in the variable coded *self-efficacy*. An ANOVA was then used to test whether this value was significantly different from zero. The test results showed that the effect was significantly different from zero, F = 124.02, p = <.001, R2 = 0.15. The following regression model was obtained: **Coded Self-E = 0.08 + (0.47 · Coded Health_M)**. This model means that if the *coded average health motivation* changes by one unit, *coded self-efficacy* changes by 0.47. In

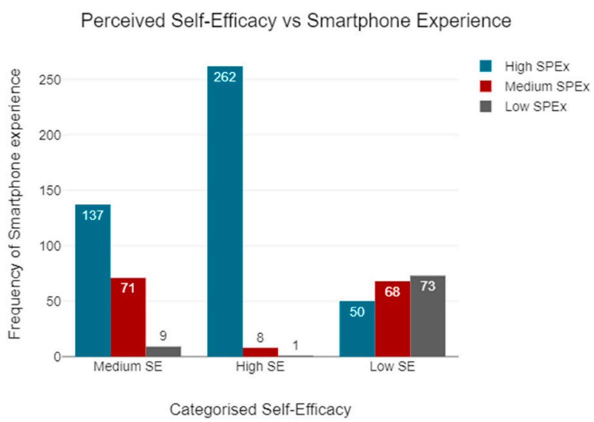

Fig. 3. Distribution of SP experience in relation to Self-efficacy.

Table 5
Expected frequencies if no relationship existed between SPEx and SE.

		Categorised SP_Experience			Total
		High SPEx	Medium SPEx	Low SPEx	
Categorised Self-Efficacy	Medium SE	143.49	46.98	26.53	217
	High SE	179.2	58.67	33.13	271
	Low SE	126.3	41.35	23.35	191
	Total	449	147	83	679

Table 6
Observed frequency distribution (SPEx).

		Categorised SP_Experience			Total
		High SPEx	Medium SPEx	Low SPEx	
Categorised Self-Efficacy	Medium SE	137	71	9	217
	High SE	262	8	1	271
	Low SE	50	68	73	191
	Total	449	147	83	679

Table 7
Spearman correlation between health motivation and self-efficacy.

Null hypothesis	Alternative hypothesis	
There is no association between Coded Self-E and Coded Health_M	There is no association between Coded Self-E and Coded Health_M	
	r	**p(2-tailed)**
Coded Self-E and Coded Heakth_M	**0.42**	**<.001**

addition to the above tests, the scores of variable health motivation, which varied from 1 to 5 were categorised. Scores below *2* were categorised as *low health motivation* level, those between 2 and 3 constituted a *medium motivation* level, and those above *3* were deemed *high motivation* level. Coded self-efficacy remained as previously coded. With the above categories, contingency tables for both the observed frequency counts and the expected table (if there were no relationship between the two variables) were obtained, and a Chi^2 test was then performed between categorised Self-Efficacy and categorised Smartphone_health motivation. No expected cell frequencies were less than 5. The results are displayed in Tables 8–9 below.

Chi^2	1,358
df	4
p	<.001

The obtained p-value of < .001 is lower than the defined significance level of 5%. Therefore, the Chi square test is significant, and the possibility that there is no relationship between the two variables is rejected. Fig. 4 below shows how categorised health motivation fits neatly into each corresponding categorised self-efficacy in that each participant had a corresponding level of health motivation and self-efficacy (high - high, medium - medium and low - low).

4.3. The combined influence of smartphone experience and health motivation on self-efficacy

The statistical analysis section was concluded by assessing the combined influence of smartphone experience and health motivation

Table 8
Expected frequencies if no relationship existed between H_Mot and SE.

		Categorised Health Motivation			Total
		Medium HMot	High HMot	Low HMot	
Categorised Self-Efficacy	Medium SE	69.35	86.61	61.04	217
	High SE	86.61	108.16	76.23	271
	Low SE	61.04	76.23	53.73	191
	Total	217	271	191	679

Table 9
Observed Frequency distribution (H_Mot).

		Categorised Health Motivation			Total
		Medium HMot	High HMot	Low HMot	
Categorised Self-Efficacy	Medium SE	217	0	0	217
	High SE	0	271	0	271
	Low SE	0	0	191	191
	Total	217	271	191	679

Results show that there is a statistically significant relationship between categorised *health motivation* and categorised *self-efficacy*, $\chi^2(4) = 1{,}358$, p = <.001, Cramér's V = 1.

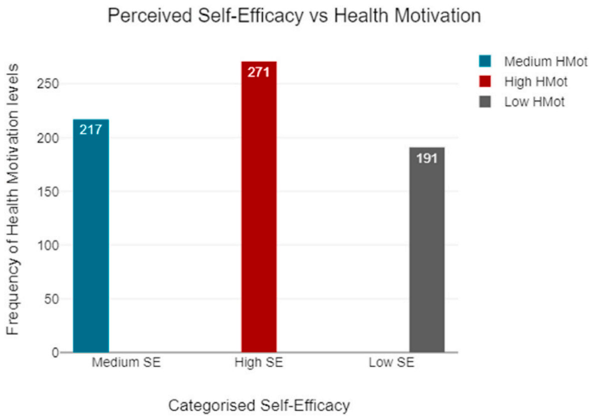

Fig. 4. Distribution of health motivation in relation to Self-efficacy.

on self-efficacy. Therefore, a multiple linear regression analysis was performed on the variables *High smartphone experience* and *health motivation* (SPEx, HMot) as well as Medium smartphone experience and health motivation in relation to coded Self-Efficacy. The regression model showed that the variables High SPEx, Medium SPEx, High *HMot* and Medium *HMot* explained 76.06% of the variance in the variable coded *Self-efficacy*. An ANOVA was used to test whether this value was significantly different from zero. Within the present sample, the effect was significantly different from zero, F = 535.37, p = <.001, R2 = 0.76. The following regression model was obtained: Coded Self-E = **-1.19** + **(0.95 x High SPEx)** + **(0.82 x medium SPEx)** + **(1.05 x Medium HMot)** + **(1.76 x High HMot)**. The model indicates that when all independent variables are zero, the value of the variable Coded Self-E is −1.19. If the value of the variable High SPEx changes by one unit, the value of the variable Coded Self-E changes by 0.95. If the value of the variable medium SPEx changes by one unit, the value of the variable Coded Self-E changes by 0.82. If the value of the variable Medium HMot changes by one unit, the value of the variable Coded Self-E changes by 1.05 and if the value of the variable High HMot changes by one unit, the value of the variable Coded Self-E changes by 1.76. Therefore, smartphone experience and health motivation are significant predictors of perceived and real self-efficacy.

4.4. Content analysis: Individual's task-skills fit

4.4.1. Assessing data that fits within FIST frame or concept

This assessment is based on the proposed framework displayed in Fig. 1 and the directed content analysis steps specified earlier in the methodology section (data analysis). Half of the participants were identified as *highly efficacious* in their job context, while the other

Table 10
Analysis of Task-Skills dimensions (High SE).

	High Self-Efficacy				
	Participant 4	Participant 5	Participant 7	Participant 9	Participant 10
Motivation	High	Medium	High	Moderate	Low
Experience	Moderate	Moderate	extensive	Extensive	Extensive
Context	Mixed	Excellent	Mixed	Mixed	Depressed
Education	Suitable	Suitable	Suitable	More than suitable	Suitable
Training	Highly available	Missing	Missing	Moderate	Moderate
Job Perspective	All tasks are easy. Stock management is challenging.	All tasks are easy. Stock management is an issue.	All tasks are easy. Consultation process is an issue.	Using the clinic management system is challenging.	Unfriendly clinic system. Nurses are slow to type notes.

Table 11
Analysis of Task-Skills dimensions (Moderate SE).

	Moderate Self-Efficacy				
	Participant 1	Participant 2	Participant 3	Participant 6	Participant 8
Motivation	High	Low	High	High	Moderate
Experience	Moderate	Extensive	Very limited	Moderate	Very limited
Context	Excellent	Depressed	Mixed	Mixed	Excellent
Education	Limited	Suitable	Suitable	Suitable	Suitable
Training	Missing	Missing	Missing	Missing	Missing
Job Perspective	Stock-taking and management is an issue.	Managing stock is challenging.	Communicating with patients is a challenge.	Managing consultations is a challenge.	Communicating with patients is a challenge.

half were identified as being only *moderately efficacious*. This was based on how they described their perceived contribution to their clinic's sustainability and their previous performance appraisal outcomes (if conducted). Then, using the codebook specified in Table 1, the researchers assessed participants' statements in response to questions related to each dimension in the framework (motivation, education level, training, context, smartphone experience and job perspective). Tables 10 and 11 below show the outcome of the above analysis. The questionnaire items are in Appendix 4.

Table 10 above shows that three participants were rated with the best possible outcome at least in one dimension on each leg of the FIST construct. This is in contrast to results in Table 11 where participants were generally rated highest only on one leg of the FIST framework, whereas the other leg did not have any highest-rated dimension. This would indicate that only one link, either the Individual-task fit or the Individual-skills fit was stronger while the other was weak. Furthermore, in the high self-efficacy category depicted in Table 10 only participant #10 had two dimensions on which she was rated with the lowest possible outcome; a low motivation level accompanied by a depressed job context. This is in contrast to the moderate self-efficacy category depicted in Table 11, where up to four participants had two dimensions on which they were rated with the lowest possible outcome. Furthermore, it can be observed that in the moderate self-efficacy group, training was always missing. Except for one participant (2), experience was either moderate or missing. Therefore, participants 4, 7 and 9 in Table 10 and participants 2, 3, and 8 in Table 11 fit the proposed FIST construct. In addition to the above, participants 5 and 6 can also fit the framework in that they both lacked training opportunities but had been rated with moderate outcomes on the remaining three dimensions. The discrepancy in one being classified as having high self-efficacy while the other was classified as having moderate self-efficacy can be explained by the different dimensions in which each received the highest rating. Whereas participant 5 had an excellent working context, participant 6 was highly motivated. Since both context and motivation are on the individual-task side of the FIST framework, the discrepancy in classification could simply indicate that a supportive job context is more significant than an individual's intrinsic motivation in driving self-efficacy.

This study did not assess task specifications, requirements and related information separately. However, exploring the *job perspective* showed that participants preferred performing certain tasks over others. This demonstrated the relevance of motivation in driving self-efficacy. Furthermore, participants commented that these dimensions were crucial adoption determinants of health assistive technologies, such as RPMTS. For example, half of the respondents indicated that stock-taking and management were difficult tasks that they did not want to perform. Three participants mentioned that compiling reports at the end of the month was time-consuming and tedious. One respondent pointed to requirements that the existing system imposes on nurses to type their patient notes into the electronic clinic management system rather than writing them on paper. Another participant mentioned the failure of developers to consider bottlenecks in the patient consultation process (registration, consultation) and devise solutions to address these to increase the system's usefulness.

Finally, two participants indicated that patient registration is unnecessarily tedious and difficult because patients cannot self-register their personal information on the system. Moreover, one of these two felt that an online system accessible from home and within the clinic could alleviate the problem and improve the provision of patient details (for example, patients who do not know their ID numbers or their date of birth when they arrive at the clinic). Preference for some tasks while expressing dislike for others could help identify tasks that ADHTs should support to increase performance in each job context.

From the above findings, it may be inferred that had designers engaged in task analysis to develop task specifications, characteristics, requirements and related information, some of the identified challenges would have been minimised or avoided altogether through design. Therefore, even though no single participant's statement had been interpreted as meaning low self-efficacy to make the distinction between these two categories more precise, the above differences between moderate and high self-efficacy seem significant. However, participants 10 and 11 did not fit the proposed FIST construct. They are discussed in the next section below.

4.4.2. Assessing data that does not fit within FIST frame

Unlike the rest of the participants interviewed in the study, participant 10 had a low level of motivation and worked in a depressing context (Table 10). The above participant had been rated highly efficacious in her job. However, when reviewing the transcript for this participant, it emerged that she had several clinic assistants under her supervision who were, as she put it, "difficult to manage". This suggests that her low morale and depressed working environment or context may be due to human resources management issues that have little or nothing to do with the official job description of a clinic assistant being analysed here. Another participant who did not fit the proposed FIST framework is participant 1.

As depicted in Table 11, this participant was both highly motivated and had, at the same time, moderate experience and an excellent working environment or context. Yet, she had been classified as being only moderately efficacious. The proposed FIST framework would have predicted that this participant should, by contrast, have been classified in the high self-efficacy category. However, a close look at the captured data reveals two facts that might explain the observed anomaly. This participant was also the only CA who was above 50 years of age and had not completed matriculation (her education level had been rated as limited because she only completed standard 9). The above two facts could explain why this participant was classified only as moderately efficacious, based on her response to questions related to her contribution to her clinic's success and previous job appraisals. Therefore, both these apparent discrepancies seem to have plausible explanations.

5. Discussion and implications of the study

While the statistical confirmation of a strong correlation between smartphone experience and participants' perceived self-efficacy on a future ADHT is not surprising, the moderate correlation between participants' health motivation and perceived self-efficacy was not anticipated. On the surface, it is unclear why a participant's reason for performing a given target health-related task (motivation), such as scheduling a visit to a healthcare facility, online or looking up symptoms of a given disease on a smartphone, would impact their future, perceived self-efficacy in performing that task.

However, looking at the results of the directed content analysis, it appears that in the context of future technology, such as ADHT, motivation may reflect a participant's level of commitment to acquiring the required skills to carry out the target task as well as their optimism in doing so, successfully.

The results of the directed content analysis also suggest that detailed task definition, including its characteristics, specifications, information and performance requirements, may be crucial in assessing the existing task skills fit ahead of technology design and development. Therefore, by placing the individual component behind the task-skills link within the FITT configuration, ADHT' designers and developers can easily identify the skills and abilities necessary to perform the previously defined task successfully. They could then use this information to design technology that supports and enhances these skills and abilities, thus improving the potential for optimum fit between the individual and the technology.

However, it is essential to remember that the FITT framework's individual component has always included *skills* and should, thus, not be completely removed or separated from the task and technology components. A range of factors, including personality, motivation, outcome expectancy or cognitive and physical abilities, can influence the fit between the individual, task, and technology. Therefore, while emphasizing the *task skills* link ahead of technology design and development, it is vital to consider all three components of the FITT framework together in order to fully grasp and optimize the fit between individuals, tasks, and technology in a specific, individual mobile consumer context.

Overall, this study implies that in individual mobile consumer settings where the intention is to gauge the potential adoption and use of a given future technology, such as an RPMTS, it would be easier and beneficial to assess the task still fit prior to technology design and development. Additional factors of the individual components such as age, gender, motivation, personality or natural abilities can always be considered at a later stage or as the technology is being designed or developed.

5.1. Introducing the FISTT framework

In the main, the results of this study support the propositions made within the FIST construct. The central proposition was that where the FITT framework is to be used for predictive purposes, it should be revised to include potential adopters' *skill levels* anchored in their levels of *education*, *training* and *experience* in relation to the task to be supported by new technology. The fit between the adopter's task and skills should be abstracted at the elementary level and be examined before developing an ADHT, such as RPMTS, to offer pertinent insights into their conception, design and requirements development. Moreover, the potential adopters' level of education, training and experience on smartphones should predict future RPMTS-related task-skills fit and the extent of related future adoption.

The FIST construct suggests that even in contexts where there are existing legacy technological tools or systems, the proposed framework would help identify the skills that the new technology should be designed to enhance. It would also sufficiently specify the tasks the technology should facilitate by defining and delineating task characteristics, specifications and performance requirements.

Statistical analysis showed that potential patients with high health motivation levels (with a desire to monitor and assess their health and well-being) and significant smartphone experience were also more likely to have high self-efficacy on future ADHTs.

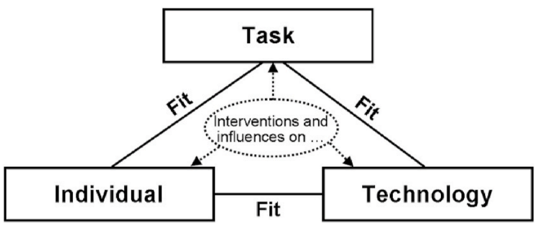

Fig. 5. Traditional FITT framework.

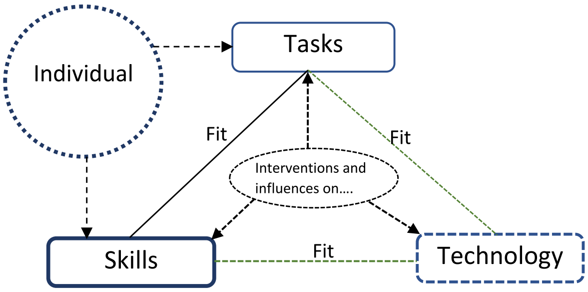

Fig. 6. The proposed FISTT framework for RPMTS.

Therefore, it was concluded that health motivation level and smartphone experience were predictive of future perceived self-efficacy, which is a prerequisite for RPMTS adoption and use. Direct content analysis was conducted to address future adoption in a job context. It showed that in addition to motivation levels and experience, other variables or dimensions, such as work context, task specification and characteristics, education and training levels, were also essential links between individuals and their tasks and skills. The proposed dimensions on each side of the FIST construct were not all present at the same level or degree. Some were high, others medium, and yet others were low. What was important was to have at least a medium degree in one dimension on each leg of the framework. Furthermore, the dimension of *job perspective* demonstrated that designers need to identify specific tasks that the contemplated ADHT should facilitate by distinguishing between task characteristics, specifications, requirements and information. They should also be clear about the present user's skills level that the technology should enhance to improve adoption and use.

Therefore, in the context of ADHTs in general and RPMTS in particular, the researchers propose using and applying the fit between Individuals, skills, tasks and technology (FISTT) framework depicted in Fig. 6. The existing, traditional FITT framework which is being updated in this study, is also depicted in Fig. 5 below for comparison and convenience purposes. Fig. 5 below shows that the 'individual' leg of the traditional FITT framework is analysed at the same level of abstraction as the task and technology. Yet, the *task* and *technology* have no agency, whereas the *individua*l does. The FISTT framework replaces the '*individual*' with his current and potential future '*skills*' and, thus, significantly simplifies the operationalisation of the framework in individual consumer settings.

6. Limitations and future research directions

Although the study makes a considerable contribution to the existing literature on the use of the FITT framework to predict the potential adoption of a prospective technology, the study is limited in some significant ways. Firstly, because the survey focused on three variables only, it did not capture the full complexity of the research question. Therefore, the generalisability of the survey findings is limited and does not provide a full and comprehensive picture of the examined phenomenon (how the fit between tasks and skills impacts perceived self-efficacy). Although the qualitative content analysis was used to address the above limitation, using a completely different sample and method in a job context does not completely remedy the situation. Its results are tied to the context within which they were derived and thus not at all generalisable.

Secondly, the qualitative content analysis results were highly subjective, particularly in using only two categories of self-efficacy, high and moderate. In reality, levels of self-efficacy can range from a continuum of low to medium to high. Again, this limitation points to a highly subjective assessment of the fit construct. Finally, the study covertly suggests, without adequate empirical evidence, that an individual relates to technology only indirectly through their tasks and skills and therefore has no direct relationship with technology.

Therefore, future research should be undertaken to refine the variables used in a similar survey to fully test whether the FISTT framework's power is higher than that of the FITT framework in individual mobile consumer settings. Furthermore, additional research is needed to investigate whether a direct relationship between an individual and technology could exist based on other individual components (age, gender, personality, and cognitive or physical abilities), independent of their tasks and skills, as suggested in the traditional FITT framework. It is also recommended that the proposed FISTT framework be applied as a predictive framework to assess the potential for the future voluntary adoption of ADHTs and an explanatory framework to explicate the successful adoption of ADHTs or failure thereof.

7. Conclusion

This article evaluated and validated the relevance of task-skills fit as an antecedent of ADHTs and RPMTS adoption and use. It began by proposing the fit between individuals, skills and tasks (FIST) as a predictive construct for technology adoption and use. The FIST construct was applied to data previously collected in a larger survey to assess whether an individual's motivation and experience levels would positively impact their perceived self-efficacy. The FIST construct was also used to design a semi-structured interview guide which was subsequently used to test additional fit dimensions not previously tested. Finally, directed content analysis was used to analyse the interview transcripts. The results confirmed the proposals of the FIST construct and the FISTT framework introduced in Fig. 6. The work contributes significantly to technology adoption literature by highlighting how the application of the FISTT framework with emphasis on the future users' skills may better predict the future adoption and use of technology products, in the development phases.

Author contribution statement

Barimwotubiri Billy Ruyobeza: Conceived and designed the experiments; Performed the experiments; Analysed and interpreted the data; Contributed reagents, materials, analysis tools or data; Wrote the paper.

Sara S. (Saartjie) Grobbelaar & Adele Botha: Conceived and designed the experiments; Contributed reagents, materials, analysis tools or data.

Data availability statement

Data included in article/supplementary material/referenced in article.

Additional information

No additional information is available for this paper.

Funding

The article was internally funded by the Department of Industrial Engineering, University of Stellenbosch. The source of funding did not take part in the study design, data collection, interpretation of the results, writing of the manuscript, or decisions regarding publication of the manuscript.

Ethics approval and consent to participate.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Acknowledgements

We thank all the three researchers who contributed to the study.

APPENDICES.

Appendix 1. User's perceived self-efficacy

Questions	How good would you be in assessing your health status and using your smartphone to access primary healthcare services if an appropriate application was available to you? *Please rate the following statements on a scale from 1 to 5.1 = Strongly disagree, 2 = Disagree, 3 = Neither agree or disagree, 4 = Agree, 5 = Strongly agree*
1	I feel comfortable downloading and installing a new app on my phone or anyone else's.
2	I am generally able to download, install and use a cell phone by myself without any help
3	I can easily change the settings of mobile applications on my phone to reflect my preferences.
4	I persist and continue to try and install an online application even when I face errors preventing me to do so.
5	It is easy for me to find information online regarding symptoms of illnesses or diseases that affect me and or my family.

Appendix 2. User's experience (on smartphone use)

Questions	How familiar are you with the following smart devices, features and functions? *Please rate the following statements on a scale from 1 to 5.*1 = not at all familiar, 2 = somewhat familiar, 3 = familiar, 4 = extremely familiar, 5 = Expert user of smartphones.
1	Using a cell phone
2	using a touchscreen
3	finding health-related information online
4	Keyboard
5	Settings
6	Operating system
7	Username and Password

Appendix 3. User's health Motivation and Tasks

Questions	Please rate your level of agreement or disagreement with the following statements on a scale from 1 to 5.1 = Strongly disagree, 2 = Disagree, 3 = Neither agree nor disagree, 4 = Agree, 5 = Strongly agree
1	Keeping generally well and healthy is very important to me
2	It is easy for me to find information online on recommended treatments of illnesses that afflict me and or my family
3	I believe that primary healthcare service delivery is fundamental to citizens' health education and well-being
4	I would like to have detailed information about prevalent local diseases, even though I may not be directly affected

Appendix 4. Semi-Structured Interview Guide with CAs

QNr	Questions
1	Please select the category which best describes your age group (18–30, 31–50, 51–70, over 70)
2	Please select one category which best describes the highest education level you have completed (less than grade 3, grade 4–8, grade 9–11, matric, some higher education in college or university, bachelors, Master's or higher)
3	What is your home language and which language is spoken in this area?
4	Are you currently registered as an assistant nurse/CA? If yes, which grade are you and when did you obtain your registration?
5	For how many years have you been practising as an assistant nurse/CA?
6	Do you believe that your qualifications are sufficient for your job? Why do you so believe?
7	Are you planning to further your qualifications? If so, where and how?
8	Please name three illnesses that you believe are the most prevalent in this district
9	Do you own a smartphone?
10	Have you ever downloaded an app from google play or apple store and installed it?
11	If yes, how comfortable would you feel installing and configuring a patient health management application on your phone? (unable to do it, not sure if I can, can try it, I would feel comfortable, completely competent)
12	In general, how motivated do you feel at work? (I am very demotivated, demotivated, neutral, I feel somewhat motivated, I am extremely motivated)
13	How stimulating do you find your day-to-day tasks? (Not stimulating at all, only minimally stimulating, neutral, somewhat stimulating, extremely stimulating)
14	Do you have work goals? (No, I just get through the day, Sometimes I set some goals, Yes, I have work goals [specify])
15	How inspiring do you find your work goals? (Not inspiring at all, minimally inspiring, neutral, somewhat inspiring, extremely inspiring)
16	How well do you think you are growing in your role as a nurse assistant? (I am not growing at all; not well, very slowly; growing slowly; growing, growing fast and well)
17	How happy do you feel coming to work? (Not happy at all, reasonably happy, happy, extremely happy to come to work)
18	How much do you think you are contributing to the success of the clinic (very little, modest contribution, as all my colleague, one of the main contributors)
19	How well do you feel your work is recognised by your manager? (Not at all, minimally appreciated, somewhat appreciated, significantly recognised)
20	How would you rate your overall satisfaction? (unsatisfied, somewhat unsatisfied, neutral, somewhat satisfied, very satisfied)
21	Would you recommend your current job role as an assistant nurse/CA to your friends? (No, some may enjoy my job, neutral, I would not dissuade others from joining me, Yes I would)
22	How secure do you feel in your job? (Not secure at all, reasonably secure, not sure, secure, very secure)
23	How often does your employer offer you an opportunity for further training (once every 6 months, once every year, once every 3 years, never)
24	When last was your job performance assessment (last year, past 2 years, past 3 years, never)
25	If there was ever an assessment; at the time of your last assessment, what were the results of the assessment? (bad, somewhat bad, neutral, good, very good, excellent)
26	Did you agree with results of the assessment? If not, why not?
27	What are the most challenging tasks and aspects of your job? (taking vitals, capturing patient data in a computer, managing consultation process, managing medication stock, communicating with patients, using technology related equipment)
28	What actions do you have to perform to carry out that challenging task or related aspects?
29	How would you describe your interactions with patients about their needs, requirements and expectations? (complicated, difficult, demanding, simple, very pleasant)
30	How would you depict your task of making, managing and maintaining patient's files (complex, difficult, demanding, simple, very pleasant)
31	How would you characterise your task capturing patient data on a computer system? (tedious, challenging, demanding, easy, very pleasant)
32	What do you like most about your job?
33	What specific tasks do you enjoy the most in your job?
34	What do you dislike most about your job?
35	What specific tasks do you dislike in your job?

References

[1] R. Spies, S. Grobbelaar, A. Botha, A scoping review of the application of the task-technology fit theory, in: Lecture Notes in Computer Science (Including Subseries Lecture Notes in Artificial Intelligence and Lecture Notes in Bioinformatics), vol. 12066, LNCS, 2020, pp. 397–408, https://doi.org/10.1007/978-3-030-44999-5_33.
[2] W. Honekamp, H. Ostermann, Application of the FITT framework to evaluate a prototype health information system [Online]. Available: http://hmirc.de/index.php?id=77http://www.umit.at/page.cfm?vpath=departments/public_health/division_of_health_policy_administration_and_law_d&expanddiv=subDeptItem13972, 2011.
[3] D.L. Goodhue, R.L. Thompson, Task-technology fit and individual performance, MIS Q. 19 (2) (1995) 213–233, https://doi.org/10.2307/249689.

[4] V.H. Venkatesh Robert Smith, M.G. Morris, WHY DON'T men ever stop to ask for directions? GENDER, social influence, and their role in technology acceptance and usage behavior 1 [Online]. Available: https://ssrn.com/abstract=3681106, 2000.
[5] M. Tarafdar, Impact of technostress on end-user satisfaction and performance techno stess view project email stress view project, J. Manag. Inf. Syst. (2011), https://doi.org/10.2307/29780194. Article in.
[6] C. Middleton, R. Scheepers, V.K. Tuunainen, When mobile is the norm: researching mobile information systems and mobility as post-adoption phenomena, Eur. J. Inf. Syst. 23 (5) (2014) 503–512, https://doi.org/10.1057/ejis.2014.21. Palgrave Macmillan Ltd.
[7] E. Ammenwerth, C. Iller, C. Mahler, IT-adoption and the interaction of task, technology and individuals: a fit framework and a case study, BMC Med. Inf. Decis. Making 6 (February) (2006), https://doi.org/10.1186/1472-6947-6-3.
[8] S. Kujala, E. Ammenwerth, H. Kolanen, M. Ervast, Applying and extending the FITT framework to identify the challenges and opportunities of successful ehealth services for patient self-management: qualitative interview study, J. Med. Internet Res. 22 (8) (2020) 1–13, https://doi.org/10.2196/17696.
[9] M. Tsiknakis, A. Kouroubali, Organizational factors affecting successful adoption of innovative eHealth services: a case study employing the FITT framework, Int. J. Med. Inf. 78 (1) (2009) 39–52, https://doi.org/10.1016/j.ijmedinf.2008.07.001.
[10] S.B. Ali, J. Romero, K. Morrison, B. Hafeez, J.S. Ancker, Focus section health IT usability: applying a task-technology fit model to adapt an electronic patient portal for patient work, Appl. Clin. Inf. 9 (1) (2018) 174–184, https://doi.org/10.1055/s-0038-1632396.
[11] J. Gebauer, M. Ginsburg, Exploring the Black Box of Task-Technology Fit: the Case of Mobile Information Systems, 2006, p. 5. Accessed: Jun. 26, 2022. [Online]. Available: https://citeseerx.ist.psu.edu/document?repid=rep1&type=pdf&doi=f6e7a8b89fe483e54ef47e341c54c79e4c980fc9.
[12] M. Tsiknakis, A. Kouroubali, Organizational factors affecting successful adoption of innovative eHealth services: a case study employing the FITT framework, Int. J. Med. Inf. 78 (1) (2009) 39–52, https://doi.org/10.1016/j.ijmedinf.2008.07.001.
[13] N. Wickramasinghe, Understanding the mHealth implementation and adoption impact: a FVM perspective, Electronics Science Technology and Application 5 (3) (2018) 1–9, https://doi.org/10.18686/esta.v5i3.65.
[14] Y. Hua, A.M.A. Liu, An investigation of person-Task-Technology interaction and ict adoption in construction, ISEC 2017 - 9th International Structural Engineering and Construction Conference: Resilient structures and sustainable construction 4 (1) (2017) 1–6, https://doi.org/10.14455/isec.res.2017.21.
[15] M. Prgometa, A. Georgioua, J. Callena, J. Westbrook, Fit Between Individuals, Tasks, Technology, and Environment (FITTE) Framework: A Proposed Extension of FITT to Evaluate and Optimise, in: B. Séroussi (Ed.), L. Ohno-Machado, Health Information Technology, International Medical Informatics Association (IMIA) and IOS Press, 2019, https://doi.org/10.3233/SHTI190322.
[16] C. Boon, M. Biron, Temporal issues in person–organization fit, person–job fit and turnover: the role of leader–member exchange, Hum. Relat. 69 (12) (Dec. 2016) 2177–2200, https://doi.org/10.1177/0018726716636945.
[17] D.F. Caldwell, C.A. O'Reilly, Measuring person-job fit with a profile-comparison process, J. Appl. Psychol. 75 (6) (1990) 648–657, https://doi.org/10.1037/0021-9010.75.6.648.
[18] T.Y. Kim, S.C. Schuh, Y. Cai, Person or job? Change in person-job fit and its impact on employee work attitudes over time, J. Manag. Stud. 57 (2) (Mar. 2020) 287–313, https://doi.org/10.1111/joms.12433.
[19] Hila Chalutz Ben-Gal, Fit in the Future of Work 2050: towards a Person-Skills Fit Perspective 1, Tel Aviv, Jul. 2020. Accessed: Mar. 09, 2022. [Online]. Available: https://ssrn.com/abstract=3657080.
[20] P. Valderas, J. Fons, V. Pelechano, Using Task Descriptions for the Specification of Web Application Requirements," Porto: Anais do WER05 - Workshop em Engenharia de Requisitos, Jun. 2005. Accessed: Jun. 06, 2022. [Online]. Available: https://www.researchgate.net/publication/221235094_Using_Task_Descriptions_for_the_Specification_of_Web_Application_Requirements/link/00b7d5314ab859b28d000000/download.
[21] L. Bligard, Predicting Mismatches in User-Artefact Interaction : Development of an Analytical Methodology to Support Design Work, Chalmers University of Technology, Gothenburg, 2012.
[22] J.R. Benetka, J. Krumm, P.N. Bennett, Understanding context for tasks and activities, in: CHIIR 2019 - Proceedings of the 2019 Conference on Human Information Interaction and Retrieval, Association for Computing Machinery, Inc, Mar, 2019, pp. 133–142, https://doi.org/10.1145/3295750.3298929.
[23] P. Bate, Perspectives on Context: Context Is Everything, London, 2014. Accessed: Jul. 21, 2022. [Online]. Available: https://www.health.org.uk/sites/default/files/PerspectivesOnContextBateContextIsEverything.pdf.
[24] E.R. Lai, Motivation: A Literature Review Research Report, Apr. 2011. Accessed: May 19, 2022. [Online]. Available: http://www.pearsonassessments.com/research.
[25] A.H. Maslow, MOTIVATION AND PERSONALITY, first ed., Harper & Row, New York, 1954.
[26] R.M. Ryan, E.L. Deci, Intrinsic and extrinsic motivations: classic definitions and new directions, Contemp. Educ. Psychol. 25 (1) (2000) 54–67, https://doi.org/10.1006/ceps.1999.1020.
[27] P. McKenzie, Education and training: still distinguishable? Vocat. Aspect Educ. 47 (1) (Jan. 1995) 35–49, https://doi.org/10.1080/0305787950470103.
[28] M. Masadeh, TRAINING, education, development and learning: what IS the difference? Eur. Sci. J. 8 (10) (May 2012) [Online]. Available: https://www.researchgate.net/publication/279480522.
[29] P. Gregorić, F. Grgić, Aristotle's Notion of Experience 88 (1) (2006) 1–30.
[30] A. Berni, Y. Borgianni, From the definition of user experience to a framework to classify its applications in design, in: Proceedings of the Design Society, Cambridge University Press, 2021, pp. 1627–1636, https://doi.org/10.1017/pds.2021.424.
[31] R.M. Zeffane, F.A. Gul, The Effects of Task Characteristics and Sub-Unit Structure on Dimensions of Information Processing, 1993.
[32] S. Kim, D. Soergel, Selecting and measuring task characteristics as independent variables, Proceed. Am. Soc. Inform. Sci. Technol. 42 (1) (Oct. 2006), https://doi.org/10.1002/meet.14504201111.
[33] A.D. Madden, A definition of information, ASLIB Proc. 52 (9) (2000) 343–349, https://doi.org/10.1108/EUM0000000007027.
[34] A.R. Hevner, S. Chatterjee, Design Research in Information Systems: Theory and Practice, Springer, New York, 2010.
[35] A. Hevner, S. Chatterje, Design Science Research in Information Systems Overview of Design Science Research, Ais, 2004, p. 45.
[36] A.R. Hevner, A three cycle view of design science research, Scand. J. Inf. Syst. 19 (2) (2007) 87–92. http://aisel.aisnet.org/sjis/vol19/iss2/4.
[37] N.K. Kibiswa, Directed qualitative content analysis (DQlCA): a tool for conflict analysis, Qual. Rep. 24 (8) (Aug. 2019) 2059–2079, https://doi.org/10.46743/2160-3715/2019.3778.
[38] A. Assarroudi, F. Heshmati Nabavi, M.R. Armat, A. Ebadi, M. Vaismoradi, Directed qualitative content analysis: the description and elaboration of its underpinning methods and data analysis process, J. Res. Nurs. 23 (1) (Feb. 2018) 42–55, https://doi.org/10.1177/1744987117741667.
[39] N. Kristensen, C. Nymann, H. Konradsen, Implementing research results in clinical practice- the experiences of healthcare professionals, BMC Health Serv. Res. 16 (1) (Feb. 2016), https://doi.org/10.1186/s12913-016-1292-y.
[40] C. Bradway, et al., A qualitative analysis of an advanced practice nurse-directed transitional care model intervention, Gerontol. 52 (3) (Jun. 2012) 394–407, https://doi.org/10.1093/geront/gnr078.
[41] C.B. Hamilton, et al., An empirically based conceptual framework for fostering meaningful patient engagement in research, Health Expect. 21 (1) (Feb. 2018) 396–406, https://doi.org/10.1111/hex.12635.
[42] C. Chen, H. Choi, J. Xiong, Y. Tang, Aligning the factors of skill, technology and task to influence the continued use of mobile payment users in China, J. Inform. Syst. Appl. Res. 12 (2) (2019) 18–29.
[43] Y. Deng, K.T.T. Chang, Task-Technology Fit for Low-Literate Consumers: Implications for is Innovations in the Developing Regions Research-in-Progress, 2013.
[44] Delve, Qualitative content analysis: step by step, delvetool.com, https://delvetool.com/blog/contentanalysisdirected, 2022 (accessed Jul. 05, 2022).
[45] H.F. Hsieh, S.E. Shannon, Three approaches to qualitative content analysis, Qual. Health Res. 15 (9) (Nov. 2005) 1277–1288, https://doi.org/10.1177/1049732305276687.