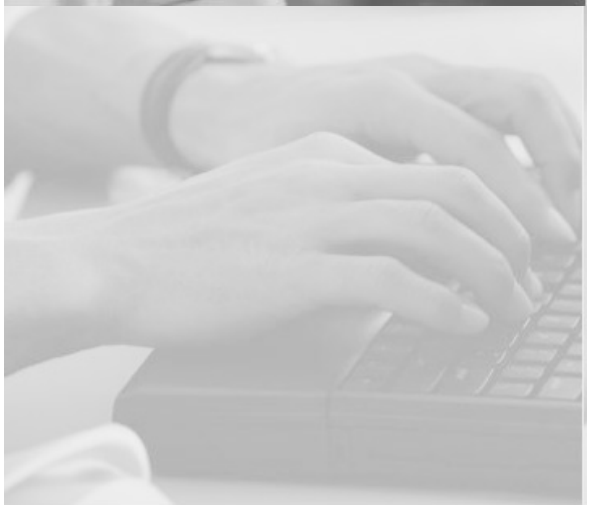
International Conference on Software Process and Product Measurement



Re-Assessing the Intention to Use a Measurement Procedure based on COSMIC-FFP

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Introduction

2004 - present

Earlier measurement of functional size using high-level specifications

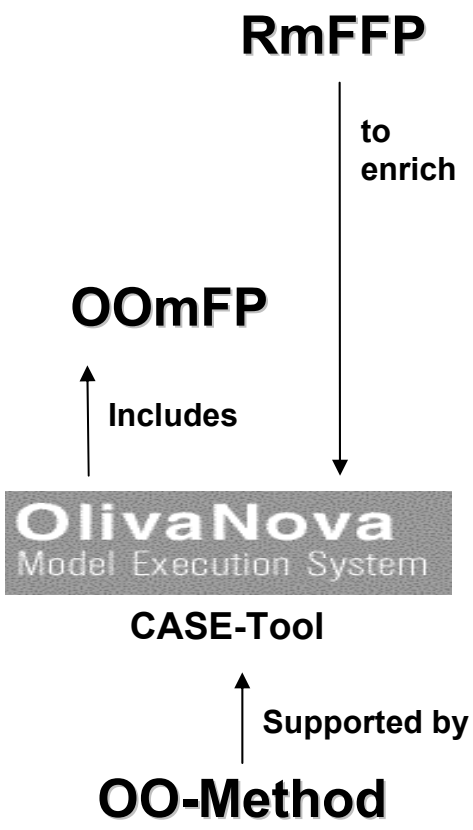
2001 - 2004

Automated module for obtaining the functional size of applications from **conceptual models** in **function points** [Abrahao et al]

Automatic code generation tool

1996 - 2002

Method based on model transformation

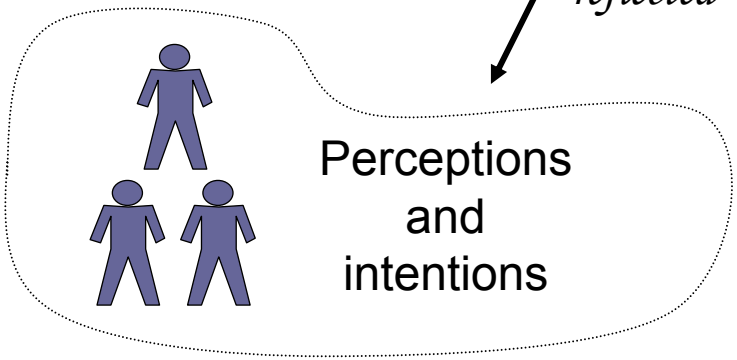


Introduction

- This is possible due to the code generation features of our OO-Method approach.
  - Traceability
  - Consistency

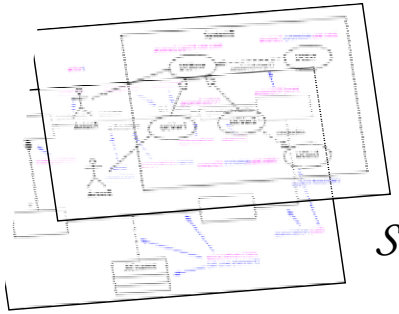
} Measurement quality

reflected



Empirical study

RmFFP



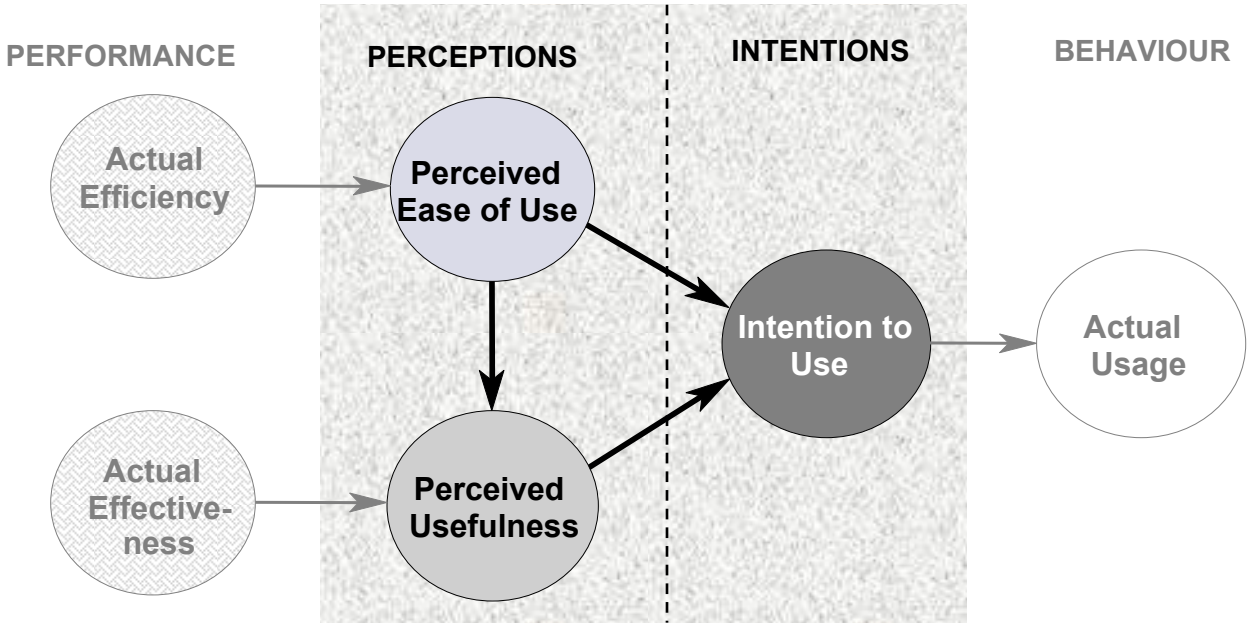
Size obtained

much closer

Size

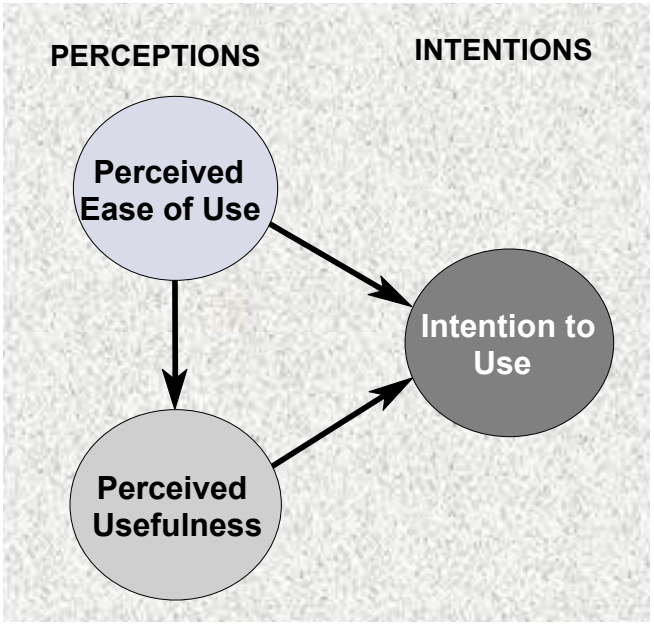
final software product

Method Adoption Model



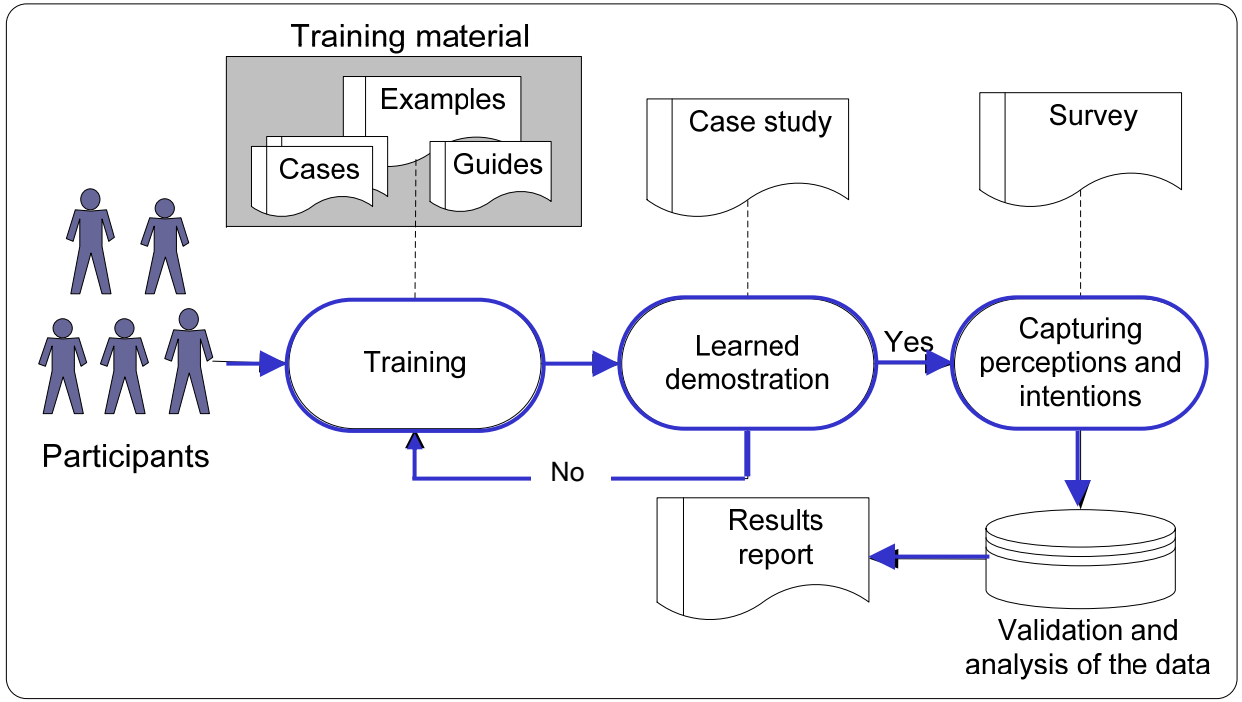
The method evaluation model, proposed by ***[Moody, 2003]***
Applied by Abrahao et al. and Poels

Method Adoption Model



[Moody, 2003]

General description of evaluation process



This process was carried out twice:

- The first study was published in QSIC 2006 (Beijing-China)
- This paper presents the replication of this empirical study to confirm the reliability of the results originally obtained

Re-assessing the intention to use RmFFP

Analyze user's responses

For the purpose of assessing RmFFP

With respect to its intention to use

From the point of view of the researchers.

In the **context** of computer science students measuring OO-Method requirements specifications with RmFFP.

GQM: Basili et al.

RQ1: Is there an intention to use RmFFP in the future?

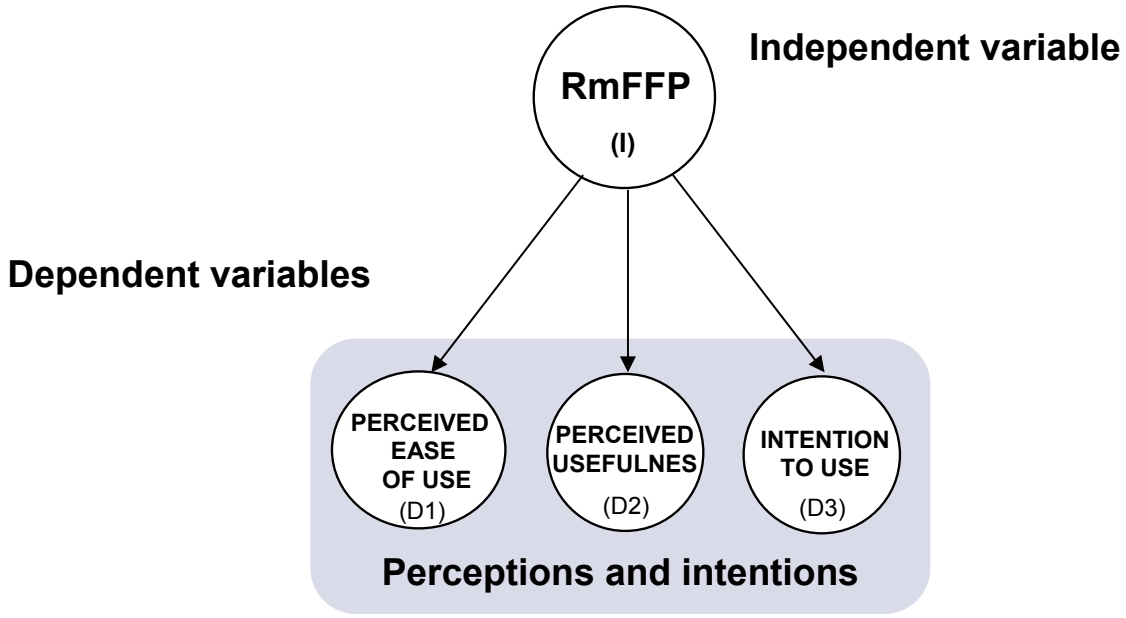
RQ2: Is the intention of use determined by perceived ease of use and usefulness?

Re-assessing the intention to use RmFFP

- Subjects
  - 11 PhD computer science students at the Valencia University of Technology who had similar backgrounds in the use of the OO-Method Requirements Model.
  - These subjects were students enrolled in the "*Software Technologies*" course (February until June of 2006).
- Experimental objects
  - Requirements specifications using OO-Method

Re-assessing the intention to use RmFFP

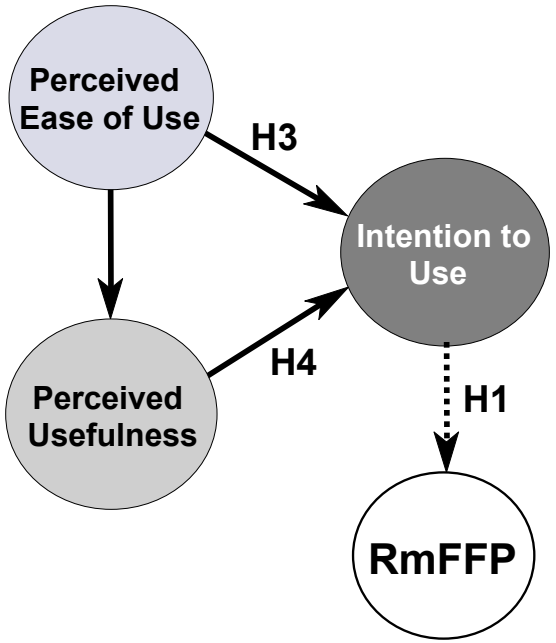
- **Selection of variables**



MAM constructs

Re-assessing the intention to use RmFFP

- **Formulation of Hypotheses**



H1: There is an intention to use RmFFP

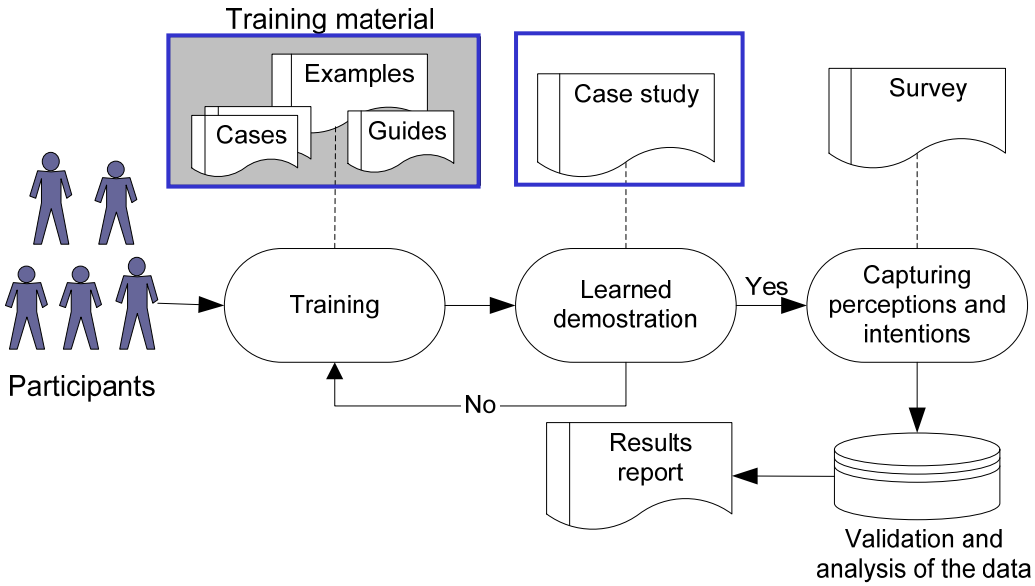
H2: Intention to use is determined by perceived ease of use and perceived usefulness

H3: Intention to use is determined by perceived ease of use.

H4: Intention to use is determined by perceived usefulness.

Re-assessing the intention to use RmFFP

- **Instrumentation**



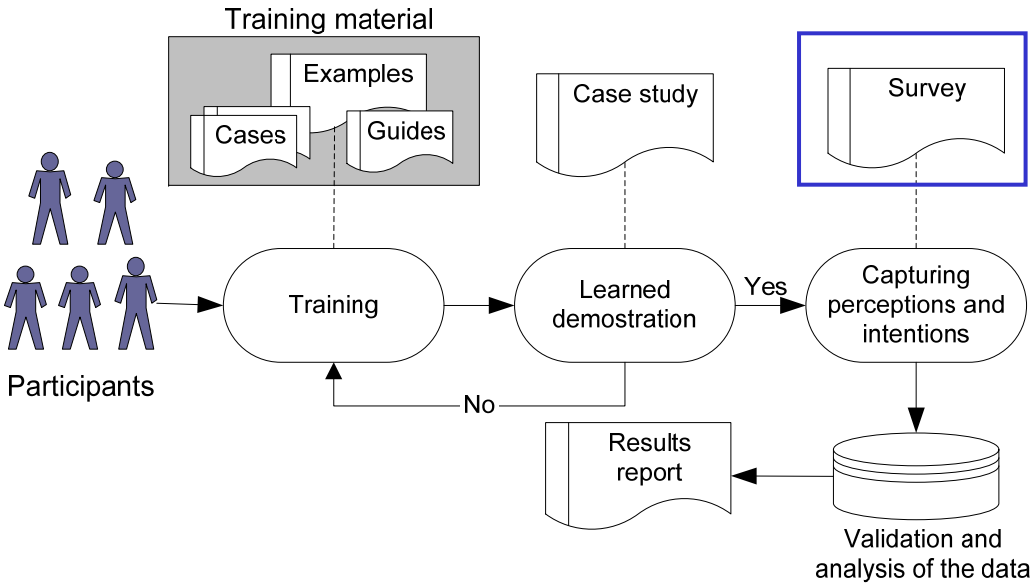
- Instructional slides on the OO-Method requirements model and RmFFP procedure
- RmFFP measurement guide

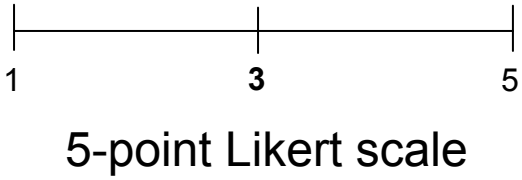
Case studies:

- Car Rental application
- Management of Maintenance of Hospital Services
- Golf Management

Re-assessing the intention to use RmFFP

- **Instrumentation**



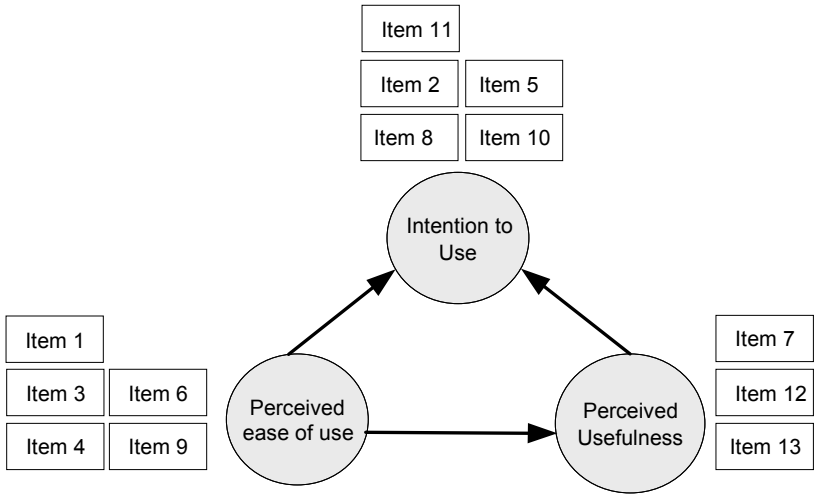


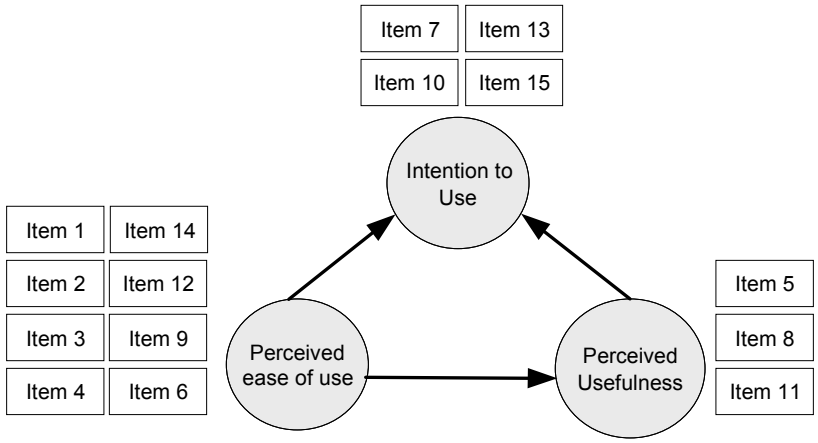
5-point Likert scale

The original survey was adjusted when replicating this empirical study

Re-assessing the intention to use RmFFP

- **Instrumentation**





The original survey was adjusted when replicating this empirical study

Re-assessing the intention to use RmFFP

- **Construct validity:** threats that adversely affect the generalization of the results of the experiment, from a theoretical standpoint
  - Constructs are not sufficiently well defined

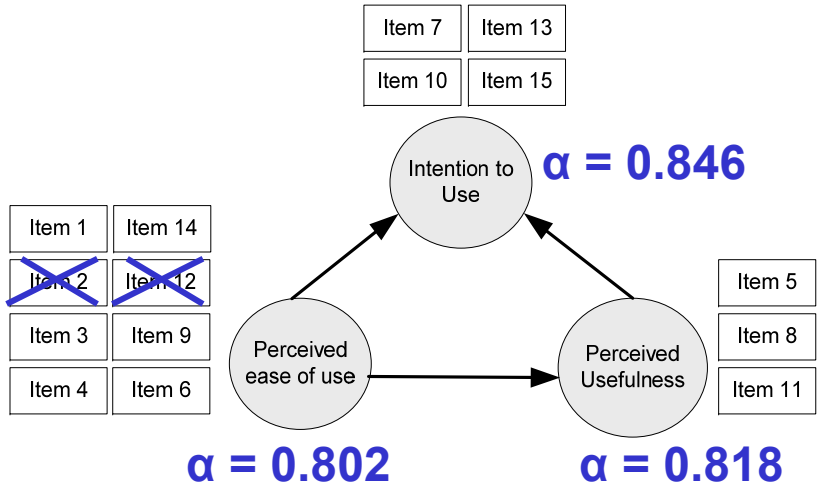
Inter-item correlation analysis

Convergent validity (CV)
Discriminant validity (DV)

DV < CV

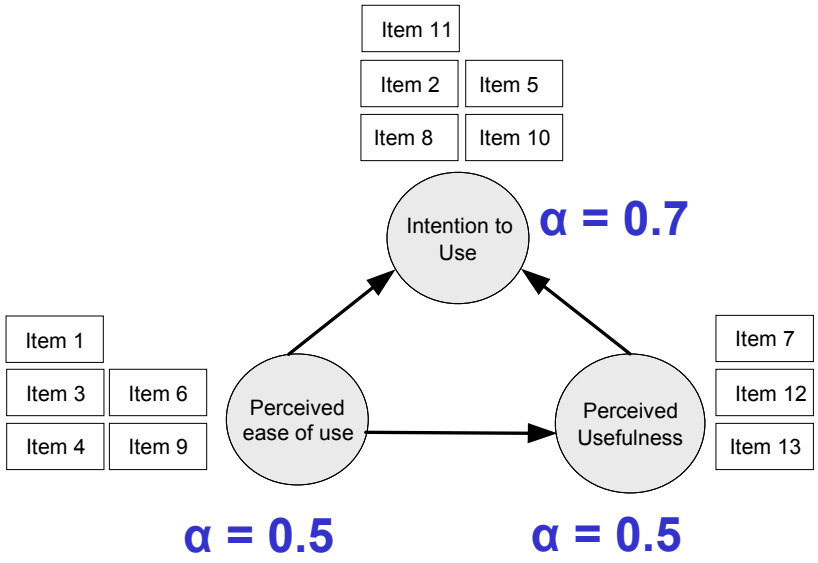
We found that the CV value was lower than the DV value for items I2 and I12

Reliability analysis

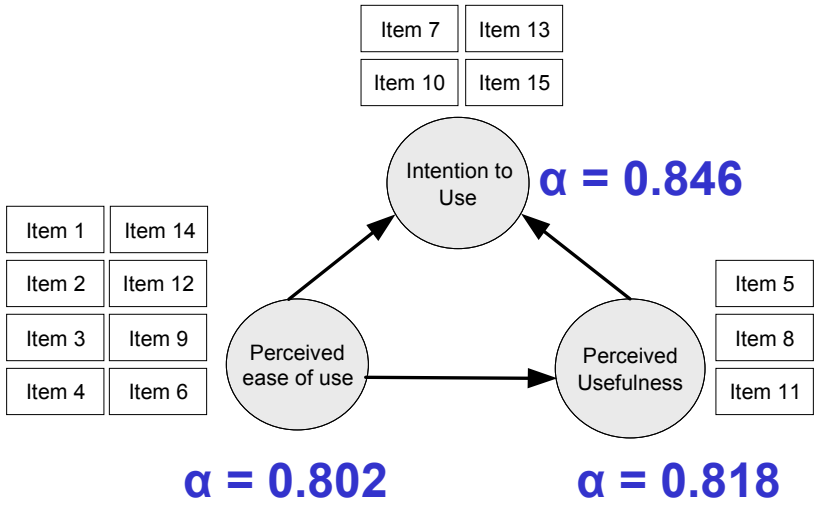


Items included in the survey are reliable (α > 0.7)

Re-assessing the intention to use RmFFP



Initial study



Replicated study

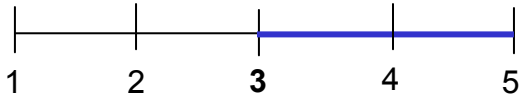
Re-assessing the intention to use RmFFP

- **Data analysis: Perceptions and Intentions**

Descriptive statistics for the MAM constructs

11 students

Statistic	PEOU	PU	ITU
Mean	3.98	3.67	3.61
Standard dev.	0.59	0.87	0.89
Minimum	2.83	2.33	1.75
Maximum	5.00	5.00	5.00



Testing the hypothesis H1

$H_o: \mu \leq 3, \quad \alpha = 0.05$

$H_a: \mu > 3$

RQ1: Is there an intention to use RmFFP in the future?

Re-assessing the intention to use RmFFP

- **Data analysis:**

One-sample t-test for the MAM constructs

Statistic	ITU
Mean Difference	.614
95% Conf. Interval for the diff.	.016 (lower) 1.212 (upper)
t	2.29
1-tailed p-value	.022

p-value< 0.05
Medium level significance

We empirically corroborated the intention to use RmFFP in the future.

Re-assessing the intention to use RmFFP

- **Data analysis:**

RQ2: Is the intention to use really a result of the perceptions experienced by the subjects using RmFFP?

H2: Perceived ease of use + Perceived usefulness → Intention to use

H3: Perceived ease of use → Intention to use

H4: Perceived usefulness → Intention to use

Regression equation technique

Re-assessing the intention to use RmFFP

- **Data analysis:**

RQ2: Is the intention to use really a result of the perceptions experienced by the subjects using RmFFP?

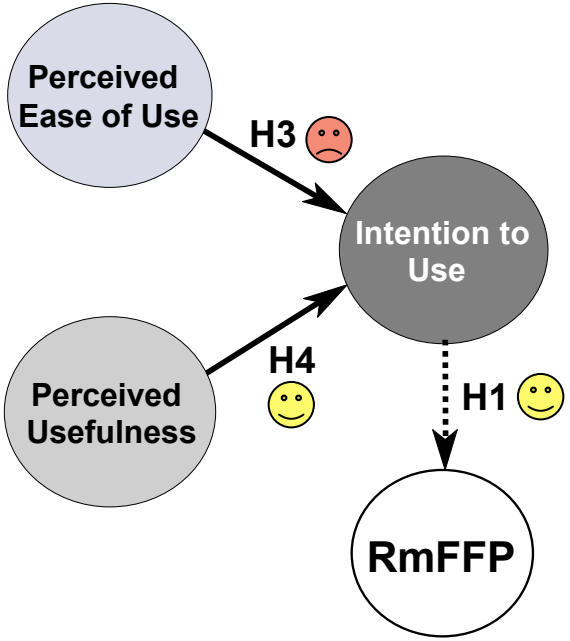
D1 = PEOU
D2 = PU
D3 = ITU

MEM hypotheses	Predictive power	Significance level	Con-firmed?
H2:D1+D2→D3	66%	Medium	Yes
H3: D1→ D3	10%	null	No
H4: D2 → D3	63,5%	high	Yes

Regression equation technique

Conclusions and future work

- This paper describes the replication of an empirical study that evaluates the intention to use RmFFP.
  - There is an intention to use RmFFP when sizing OO-Method requirement specifications
  - Perceived usefulness can have a **stronger influence** on intention to use RmFFP than perceived ease of use.



- We plan to identify and evaluate other variables that may affect the intention to use a measurement procedure

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Thank you very much for your attention

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