

Experiment to predict Factors influencing Port planning operations: Protocol and Script V.05

Related researchers:

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The experiment is designed such that two researchers (a facilitator and an observer) are required to conduct it. About 9 sessions have been tentatively planned. Each session is given an alphabet code. The first session in Delft begins with code A, and the subsequent sessions will take the succeeding alphabet codes. Every session has about 25 participants, and each participant is assigned a workstation number (For e.g. A01- A25 in Delft) which serves as a key to match the respective data in an anonymous way. This protocol serves as a guide to conduct the experiment session, collect and match the data involved. It covers the information and materials required for the session except the MS PowerPoint slides for briefing and debriefing, as well as an MS Excel time sheet to keep track of the tasks during the session. These documents are to be found in the shared Dropbox folder of the researchers involved.

1. Materials for the session

Session	Materials	Quantity	Check	Backup	Quantity	Check
	<i>(Assigned to Facilitator)</i>			<i>(Assigned to Observer)</i>		
Code: A	MATB software in an USB drive			MATB software in an USB drive and in the shared Dropbox folder		
Date: 3 October	Unity plug-in for the browser (Downloaded from web)			Executable file of the YCS game in an USB drive and in the shared Dropbox folder		
Place: Delft	Laptops/ computers	25		Laptops	5	
Facilitator: Shalini Kurapati	(Windows only, XP, Vista or 7) Gamepads Earphones	25		Gamepads	2	
Observer: Heide Lukosch	Headphones Slide pack in an USB stick Time sheet for the session in MS Excel	2		- Slide pack in the shared Dropbox folder Back up in the shared Dropbox folder	-	-

	in an USB stick. See section 3.			
	Online pre-survey (update link)		Printed copies of pre-survey. See section 1.1.	30
-----	Online post-survey (in the YCS game portal)		Printed copies of post-game survey. See section 1.2.	30
Experiment room with a projector is required	Login details printed and cut for each computer. See 1.4.	30	A soft copy of login details in USB stick and in shared Dropbox folder	
	Pens	30		
	Printed score sheet for YCS game. See 1.5.	30		
	Workstation numbers printout. See 1.3.	30	Soft copy in an USB drive and in the shared dropbox folder	
	Cellophane tape rolls	2	-	-
	USB drives to collect MATB scores	30		
	Labels for the USB drives. See 1.6.	30		
	Audio recording device	1	Note pad and pen	1
	Gift card €40	1		
	Gift card €20	1		

1.1. Online pre-survey

Please enter your workstation number

What is your age, rounded to the nearest year?

What is your gender? (M/F)

What is your highest level of education? (High school/ MBO/HBO/ Bachelor/Master/ PhD/Other). If other, please specify.

What is your current profession?

Job title	
Industry	

How many years of professional experience do you have, rounded to the nearest year?

What is your nationality?

Approximately how many hours do you spend playing entertainment games in a week?

What is your preferred genre of entertainment games? (Action, Strategy, Sports, Puzzle, Rhythm, Simulation games, Role playing games, Other). If other, please specify.

Please indicate your level of experience with the following:

	Poor	Fair	Good	Very Good	Excellent
Entertainment games					
Games for training or other work related issues					
Game design					
Port planning operations					
Field of supply chain, logistics, and transportation					

For each of the pairs of adjectives below, please indicate the extent to which you agree or disagree that the pair of traits applies to you.

	Strongly Disagree	Disagree	Somewhat Disagree	Neither Agree nor Disagree	Somewhat Agree	Agree	Strongly Agree
Extraverted, enthusiastic							
Critical, quarrelsome							
Dependable, self-disciplined							
Anxious, easily upset							
Open to new experiences, complex							
Reserved, quiet							
Sympathetic, warm							
Disorganized, careless							
Calm, emotionally stable							
Conventional, uncreative							

Please tick this box to confirm informed consent to participate in this study.

Thank you for your participation!

1.2. Online post-survey

Post-game survey Yard Crane Scheduler (YCS) game

Enter your work station number:

Please rate the following questions on a scale of 1-5, and comment if necessary

The objective of the YCS game is sufficiently clear

1	2	3	4	5
Comment:				

The objective of the YCS game is relevant to my field of study.

1	2	3	4	5
Comment:				

The tasks in the YCS game are understandable and well formulated.

1	2	3	4	5
Comment:				

The game is designed in an interesting and stimulating way.

1	2	3	4	5
Comment:				

I have a better understanding of CT operations after playing the YCS game.

1	2	3	4	5
Comment:				

The YCS game provided me an insight into the complexity of CT operations.

1	2	3	4	5
Comment:				

The YCS game was fun to play.

1	2	3	4	5
Comment:				

The feedback from the YCS game and the facilitator was useful.

1	2	3	4	5
Comment:				

Please rank the difficulty level of the game tasks.

1	2	3	4	5
Comment:				

The game reflects the interdependencies among various roles in CT operations.

1	2	3	4	5
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Comment:

The YCS game reflects the need for coordination of various processes in CT operations

1

2

3

4

5

Comment:

I have a better insight about the importance of integrated planning after playing the YCS game.

1

2

3

4

5

Comment:

The use of YCS game for education and training purposes is valuable.

1

2

3

4

5

Comment:

I expect the insights gained through this YCS game to help me in my professional practice in future.

1

2

3

4

5

Comment:

The use of YCS game can be worthwhile for Container Terminals towards adopting integrated planning approaches.

1	2	3	4	5
Comment:				
Remarks/ Comments/Suggestions				
Thank you for your participation!				

1.3. Example workstation numbers

<p>Work station number</p> <p>A01</p>	<p>Work station number</p> <p>A02</p>	<p>Work station number</p> <p>A03</p>
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1.4. Example login information

Work station number: A01 Username: A01 Password: A01	Work station number: A02 Username: A02 Password: A02	Work station number: A01 Username: A03 Password: A03
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1.5. Template for score sheet for YCS game

Workstation number: A01	
Mission 1	Score
1 st Attempt	
2 nd Attempt	
Mission 2	Score
1 st attempt	
2 nd attempt	
3 rd attempt	

1.6. Example labels for USBs

A01	A02	A03	A04	A05	A06	A07	A08	A09	A10
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2. Session script

< The facilitator and observer make sure that the room hosting the experiment is equipped with windows machines with the MATB software as well the unity plug in installed. The required game pads, ear phones, and mice are all attached to the machines. If some participants find it uncomfortable using earphones, provide the backup headset. Attach the work station numbers, using a cellophane tape. Keep 30 USB ready each labeled with the work station numbers used to collect the MATB scores. Make sure the project is connected and functional in the room. Load the slide pack containing the briefing, MATB, game play and de-briefing slides on the computer and test it. Open each of the work stations with the web browser open with the pre- game survey loaded on it >

2.1. Briefing

<The facilitator opens the session>

“Hello, everyone. Welcome to the TIL seminar. We hope to provide an interesting session today. The session is completely anonymous, and you will be identified with your workstation numbers. We may also take some pictures for our records, but will not be published. If you have any reservations against participation or taking pictures, please let us know now.”

<Wait for objections. Observer notes the objections, removes the data set and/or photos of the concerned participant who objects after the session >

“Thank you. We require your full engagement and attention during the entire session. We also would like to follow instructions very carefully. For your involvement in the session, you will be rewarded in the form of a weighted lottery method. There are two prizes, a gift card worth €40 and another worth €20. Two winners will be selected from the raffle, based on their highest scores in the second mission of the simulation game. Everyone has a chance to win, but the higher your score, the higher is your chance to win.

Now, let us begin with the briefing lecture, where we will explain about the context of the research together with further instructions.

< Facilitator gives a general briefing lecture on research context >

“Do you have any questions?”

<Answer the questions. Observer can help if facilitator requires it.>

“We will now begin the experiment with a short online survey. As the whole study will assure anonymity it is very important that you to fill in your work station number wherever required. You will be identified by your work station number. The prizes in the end also correspond to the work station number. Also note that the first 9 workstation numbers are A01 to A09 and not A1. Please pay attention to enter them correctly as they correspond to a unique key. We now request you to fill in the online survey available on your web browser within the next 5 minutes”

<Wait for the participants to fill in the online survey. If the online version fails the facilitator provides the paper copies to the students. >

2.2.MATB exercise

“Thank you. We will now proceed to the next step of the experiment which is the MATB exercise developed by NASA for testing multi-tasking abilities. We will now present to you the instructions for the MATB exercise. We will explain how to perform different tasks in the exercise. Please feel free to ask questions regarding the instructions before you begin the exercise as it is best not to interrupt in between.”

<The facilitator presents the MATB instructions>

“Do you have any questions?”

<Answer the questions >

We will keep a slide open on the screen to summarize the tasks for your reference. Please be reminded that it will be possible to ask questions after you start your MATB exercise as it has to be finished in a short span of about 5 minutes.

<Wait for more questions>

“Great.. Now, on your marks, get, set, and go!!!!”

<Wait for the participants to finish the MATB >

“Was that hard work? (<Smile>). You deserve a short break for all the hard work! We hope to see you back in 10 minutes to commence the exciting game session.

Please don't be late and please be sure to sit in the same work station when you are back!"

< Facilitator (A01- A12) and observer(A13-A25) collect the MATB data from the work stations. My Computer> C drive > MATB> Data. Copy the entire data folder and paste in the respective USB stick. After data collection, prepare the log in page of the YCS game available on the web browsers of the work stations.>

2.3. YCS game play

"Welcome back. Now let us begin with the gaming task. To get you prepared, we will give you a short introduction of the game."

<The facilitator gives a very brief introduction to the YCS game>

"It is always better to try it out than listen to the game play. You will first play a tutorial mission to get you acquainted with the game mechanics. To try the game you will first play the first level of the game known as 'Mission 1' for 2 times. You can ask questions during the tutorial mission and the 'Mission 1'. After getting acquainted with the game for a couple of times you will play 'Mission 2' in which you are required to play uninterrupted. Therefore please clear your questions before you begin Mission 2. The prizes will depend on the scores of Mission 2 only. At any point of the time if your game is stalled, close the game and restart. Your scores won't be affected. You will now be given a sheet of paper and pen to report your scores of mission 1 and mission 2. You should report the scores of completed games only."

Do you have any questions?"

<While the observer answers the questions, the facilitator distributes the login information and YCS game score sheets to the corresponding work stations. Facilitator activates the tutorial widget in the portal.>

"Please log onto the game play mode by using the login details available on your workstation. Please check if the log in details and score sheet correspond to your work station number. Please complete the tutorial session."

<Wait until participants finish the tutorial. If log in problem try clear browsing history, retry. If problem persists change browser. If that doesn't work, load the executable file for that participant.>

"I hope you understood the basics of the game. Now let's begin playing it in full."

<Observer deactivates tutorial and activates Mission 1>

Please play mission 1 two times and record your scores manually on the paper on your desk with the pen provided. You can always ask questions during mission 1. This mission is for you to familiarize with the game. Now let us begin playing!"

<Game play mission 1 for two times. Observer keeps displaying high scores every 3 minutes>

"We now request you to stop playing mission 1. Please be reminded to write your work station number on your score sheet. "

< Observer deactivates Mission 1 and activates mission 2 on the portal >

You will now see mission 2 appear on your screen. You can now begin to play mission 2. Please play mission 2 for three times and write down all the three scores on the paper in front of you. The lottery prizes depend on the scores of Mission 2. The higher your score the higher is your chance of winning. You need to play the uninterrupted. Don't forget to write down your scores on the score sheet. Unless you have technical issues regarding the running of the game, you are requested not to ask questions regarding the game play. Are you ready?..... Lets play!!!!!!"

<Game play Mission 2 for three times for about 20 minutes.>

"We now ask you to please stop the game play."

<The observer de-activates Mission 2 and activates the post game survey on the portal. After which the observer collects all the score sheets from each of the work stations>

You will now see a survey appear on your screen. Please fill it in while we draw the winners, who will be announced after the final debriefing session."

" We hope you had fun! Please mind that high scores need not automatically mean that you won the prizes. We have to wait till the debriefing session to

decide the winners using the weighted lottery method. You will now see a survey appear on your screen. Please fill it in while we draw the winners, who will be announced after the final debriefing session.”

<Facilitator runs the script to draw winners based on high scores to determine the winners>

2.4. Debriefing

“Before we begin our debriefing lecture, we would like to gather your opinions regarding the game play. We would like to audio record your answers. If any of you have objections please let us know.”

<If there are no objections, the observer records the answers using an audio recording device(cell phone for e.g.). If any participant objects, the observers takes note of the answers on a note pad>

-
- <Debriefing questions:

1. Game Play - Improvements

- Did you find the game fun playing? What made it fun?
- Did you encounter any problems or difficulties while playing the game? What kind of?
- How could the game be improved?

2.1 Strategies – Player with the highest score

- Why do you think you got the highest score? What did you do?
- Did you apply a certain strategy? What kind of?
- What did you learn from playing the game?

2.1 Strategies – Any Player with a Lower score

- Why do you think you got a lower score?
- Did you apply a certain strategy? What kind of?
- What did you learn from playing the game?
- Do you think you would be able to obtain a higher score next time you would play it?

3. Fidelity of the game

- Did you clearly understand your tasks within the game? What was the game about?
- Thinking about real container terminals as introduced earlier – do you think that the game represents an adequate level of reality?
 - If not, do you think it is necessary to change it? If yes, how?

- If yes, what functions or actions make it a realistic exercise?>

“Thank you. We will now conclude this experiment with a debriefing lecture for reflection and of course announce the winners afterward.”

<The facilitator gives a Debriefing lecture>

“Do you have any questions?”

<The observer and facilitator answer questions together >

“Thank you for participating in this study. Now it is time for the rewards. We have two winners. And they are..... Congratulations!!”

<Give away prizes>

“Thank you all for your help. If you have further questions or interest regarding our research please contact us via e-mail available on the last slide. Thanks again, all the best.”

<Back up all the data in the Dropbox folder as soon the session is over. Deactivate the YCS game accounts.>

Situation Awareness Rating Technique (SART)

Situation Awareness is defined as “timely knowledge of what is happening as you perform your tasks during the mission”

Contextual definition of **Situation**: The planning operations in the container terminal (as shown in the simulation game)

On a scale of 1 to 7, 1 being low and 7 being high, rate the level of each component of situation awareness that you had while playing **Mission 2** of the game,

Enter your work station number:

Instability of Situation- How changeable is the situation? Is the situation highly unstable and like to change suddenly (High) or is it very stable and straightforward (Low)

Low

1	2	3	4	5	6	7
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High

Complexity of Situation- How complicated was the situation? Is it complex with many interrelated components (High) or is it simple and straightforward (Low)

Low

1	2	3	4	5	6	7
---	---	---	---	---	---	---

High

Variability of Situation- How many variable are changing within the situation? Are there a large number of factors varying (High) or are there very few variables changing (Low) ?

Low

1	2	3	4	5	6	7
---	---	---	---	---	---	---

High

Arousal- Are you alert and ready for activity (High) or do you have a low degree of alertness (Low) ?

Low

1	2	3	4	5	6	7
---	---	---	---	---	---	---

High

Concentration of Attention- How much are you concentrating on the situation? Are you concentrating on many aspects of the situation (High) or focused on only one (Low)

Low

1	2	3	4	5	6	7
---	---	---	---	---	---	---

High

Division of Attention- How much of your attention is divided in the situation? Are you concentrating on many aspects of the situation (High) or focused on only one (Low)?

Low

1	2	3	4	5	6	7
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High

Spare Mental Capacity- How much mental Capacity do you have to spare in the situation? Do you have sufficient to attend to many variables (High) or nothing to spare at all (Low)?

Low

1	2	3	4	5	6	7
---	---	---	---	---	---	---

High

Information Quantity- How much information have you gained about the situation? Have you received and understood a great deal of knowledge (High) or very little (Low)?

Low

1	2	3	4	5	6	7
---	---	---	---	---	---	---

High

Familiarity with Situation- How familiar are you with the situation? Do you have a great deal of relevant experience (High) or is it a new situation (Low)?

Low

1	2	3	4	5	6	7
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High