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Article

An Inquiry into the Interdependence between Rational Choice and the "Catch-22 Situation": The Win-Win-Win Papakonstantinidis Approach

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I N F O

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A B S T R A C T

The paper deals with the interdependency between pure rationality and the catch 22 situation A catch-22 is a paradoxical situation from which an individual cannot escape because of contradictory rules or limitations. The term was coined by Joseph Heller, who used it in his 1961 novel Catch-22.

The "catch-22 game" provides us with the math material for understanding the psychological pressure of the form of "How can I get any experience until I get a job that gives me experience?" Brantley Foster in "The Secret of My Success".

It is an attempt to study rationality from the side of "cats 22" I used the win-win-win papakonstantinidis model as a methodological tool and the Pareto Optimality concept.

Keywords: Catch-22 Game, Distinctive Feature, Bayesian Inference Pareto Optimality

Introduction

"I can find a job provided I have previous work but, in order to have previous work I have to work".

In Schelling's (1960) seminal work, he distinguishes between two different types of commitment: ordinary commitment and threats. The ordinary commitment is the possibility of playing first, announcing that our decision has already been taken and that it is impossible to be changed, which forces the opponent to take the final decision. This is the case of the famous military strategy "burn the ships" illustrated above. On the other hand, threats occur when the second mover convincingly pledges to respond, in a specified contingent way, to the opponent's earlier choice (Hirshleifer, 2000).

The distinctive feature of a threat is that the sender has no incentive to carry it out either before the event or after. This leads us to questioning the credibility of this strategic movement, because announcing that a player is going to play in an opposite way to the game incentives does not change the opponent's beliefs. The message "never retreat, never surrender" is not enough to increase the bargaining power, it is necessary that the specified action is actually the one that will be played. A message is credible if it makes clear to the opponent that the play cannot change, because it is too costly or even impossible to turn back. The "catch-22 game" provides us with the math material for understanding the psychological pressure of the form of "How can I get any experience until I get a job that gives me experience?"

All these must be approached by the Bayesian inference: Bayesian inference is a method of statistical inference in

which Bayes' theorem is used to update the probability for a hypothesis as more evidence or information becomes available. Bayesian inference is an important technique in statistics, especially in mathematical statistics. Bayesian updating is particularly important in the dynamic analysis of a sequence of data. Bayesian inference has found application in a wide range of activities, including science, engineering, philosophy, medicine, sport and law. In the philosophy of decision theory, Bayesian inference is closely related to subjective probability, often called "Bayesian probability"

Analysis

Pareto Efficiency

Pareto efficiency, also known as "Pareto optimality," is an economic state where resources are allocated in the most efficient manner, it is obtained when a distribution strategy exists where one party's situation cannot be improved without making another party's situation worse. Pareto efficiency does not imply equality or fairness.

$$PARETO...EFFICIECY$$
$$MAX..Utility..Function:...MAX..U(x_1,..x_2,...x_n)$$
$$\sum p_i x_i \le M,...\forall x_i \ge 0,...\forall x_i \in \{1,..2,..n\}$$
$$p = price,...x_i = quantities.....\sum px_i = sum..of..all,,px_i$$
$$M = FRONTIER...MAX..sources..for..allocation$$

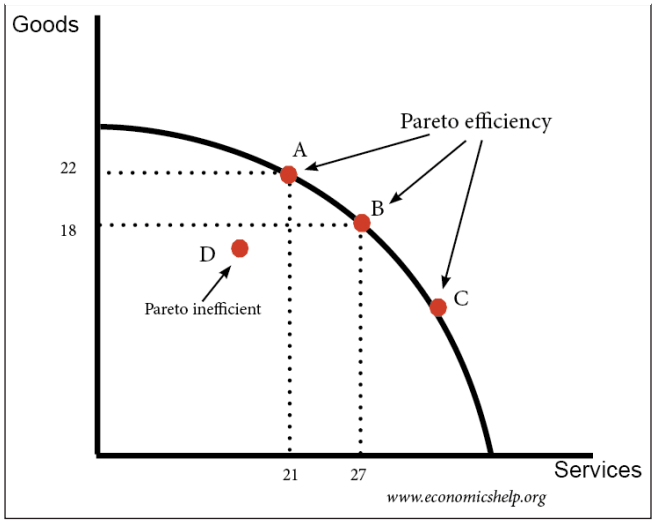


Figure 1

Catch-22

- A catch-22 is a paradoxical situation from which an individual cannot escape because of contradictory rules or limitations. The term was coined by Joseph Heller, who used it in his 1961 novel Catch-22
- Catch-22s often result from rules, regulations, or procedures that an individual is subject to, but has no control over, because to fight the rule is to accept it. Another example is a situation in which someone is in need of something that can only be had by not being in need of it (e.g.: the only way to qualify for a loan is to prove to the bank that you don't need a loan). One connotation of the term is that the creators of the "catch-22" situation have created arbitrary rules in order to justify and conceal their own abuse of power

Catch-22: the Novel (1961)

- The "Catch-22" is that "anyone who wants to get out of combat duty isn't really crazy".Hence, pilots who request a mental fitness evaluation are sane, therefore must fly in combat. At the same time, if an evaluation is not requested by the pilot, he will never receive one and thus can never be found insane, meaning he must also fly in combat
- Joseph Heller coined the term in his 1961 novel Catch-22, which describes absurd bureaucratic constraints on soldiers in World War II. The term is introduced by the character Doc Daneeka, an army psychiatrist who invokes "Catch-22" to explain why any pilot requesting mental evaluation for insanity hoping to be found not sane enough to fly and thereby escape dangerous missions demonstrates his own sanity in creating the request and thus cannot be declared insane. This phrase also means a dilemma or difficult circumstance from which there is no escape because of mutually conflicting or dependent conditions

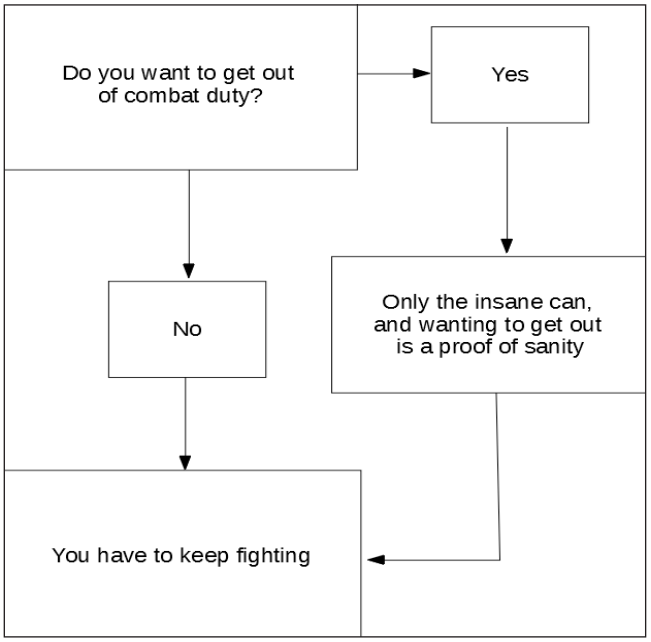


Figure 2.A Flowchart Showing how Catch-22 Works

An Example is

In needing experience to get a job. How can I get any experience until I get a job that gives me experience? Brantley Foster in The Secret of My Success.

Catch-22s often result from rules, regulations, or procedures that an individual is subject to, but has no control over,

because to fight the rule is to accept it. Another example is a situation in which someone is in need of something that can only be had by not being in need of it (e.g.: the only way to qualify for a loan is to prove to the bank that you don't need a loan). One connotation of the term is that the creators of the "catch-22" situation have created arbitrary rules in order to justify and conceal their own abuse of power.

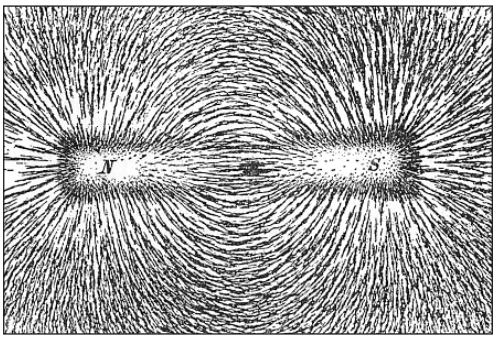


Figure 3.Various Magnetic Forces that Attract each Other by Undoing Each Other's Tendencies

Catc-22 logic: Catch-22s often result from rules, regulations, or procedures that an individual is subject to, but has no control over, because to fight the rule is to accept it. Another example is a situation in which someone is in need of something that can only be had by not being in need of it (e.g., the only way to qualify for a loan is to prove to the bank that you don't need a loan). One connotation of the term is that the creators of the "catch-22" situation have created arbitrary rules in order to justify and conceal their own abuse of power.

- For a person to be excused from flying (E) on the grounds of insanity, he must both be insane (I) and have requested an evaluation (R)
- An insane person (I) does not request an evaluation (¬R) because he does not realize he is insane
- Either a person is not insane (¬I) or does not request an evaluation (¬R)
- No person can be both insane (I) and request an evaluation (R)
- Therefore, no person can be excused from flying (¬E) because no person can be both insane and have requested an evaluation

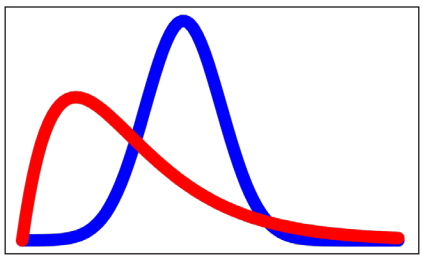
Bayesian Approach

In estimation theory and decision theory, a Bayes estimator or a Bayes action is an estimator or decision rule that minimizes the posterior expected value of a loss function (i.e., the posterior expected loss). Equivalently, it maximizes the posterior expectation of a utility function. An alternative way of formulating an estimator within Bayesian statistics is maximum a posteriori estimation.

See at:

$$P(A|B)$$

$$P(A)[red..line].exists.under.the..condition.that.the..P(B)[blue..line.]exists$$



$$P(A \mid B) = \frac{P(B \mid A)P(A)}{P(B)}$$

$$P(A|B) = \frac{P(B|A)P(A)}{P(B)}$$

The suggested formula:

$$G^t = f(U_1, U_2, U_n) \left| \frac{P(RC|C-22)P(C-22)}{P(RC)} \times \frac{P(C-22)|P(RC)}{P(C-22)} \right.$$

$$f(U_1 ... U_n) general. U_1 \cap U_2 \cap ... U_n = U_1 \times U_2 \times U_n m.ax \Rightarrow \frac{d}{dx}(U_1 \times U_2 \times .. U_n) = 0$$

$$G = game$$

$$t : time..repeated$$

$$RC;..RATIONAL..CHOICE$$

$$U_i : .Utility..Funtion,, for..the..i..player$$

$$C - 22 : CATCH .22..situation$$

$$3win. : 3person..equilibrium$$

- Social Bargaining in terms of disagreement

3-ple person, in ONE win-win win-equilibrium

Ideal situation-the Angels' Moment

- It is obvious that in a Democratic Society, must be the Angels Moment

$$\begin{array}{l} u(x) - u(d_1) = m. \\ v(y) - v(d_2) = m. \\ C(z) - C(d_3) = n \end{array} \Leftrightarrow \begin{array}{l} u(d_1) = 0 \\ v(d_2) = 0 \\ C(d_3) = 0 \end{array}$$

- The maximum profit for the society is

$$max(u(x) - u(d_1))(v(y) - v(d_2))(C(z) - C(d_3))$$

in threat terms t_i :

$$max(u(x) - u(t))(v(y) - v(t))(C(z) - C(t))$$

- In a poetic expression, people have to set higher goals, in every interaction negotiation so they can express their disagreement, at some point or threat point of stopping the negotiation
- In an even more poetic expression, people must re-start dreaming of a better life again one of the signs of globalization is to level everything for instant euphoria
- But so have people stopped dreaming. Relationships, expectations, products and even lasting products (furniture-kitchens etc) and even the heads of state

and government and relationships between them have all become instant

- The deep wound of globalization is the conversion of everything from constant to instant
- People have to accept this "instant point", without history, future, and without dreams Ignatius Ramonet supports and not unfairly the past present and the future has been squeezed into the instant now, the supreme moment of history all made by the wish factory " 1000 cold "NO" for an emotional "YES" Buskalia
- Of course, every citizen has (at least theoretically the right of veto, a veto, in the form of threatening

if....u(x)..v(y)..C(z).....are.the..utility...functions..of...A – B – C(community)..bar – geners,..then

$$\max(u(x)-u(d))(v(y)-v(d))(C(z)-C(d))$$

must...be...the..overall...Social...Equilibrium.....or...the..." Angels' Moment.."

If....u(x)– u(d) = 0, and / or..v(y)– v(d) = 0,...and / or....C(z)– C(d) = 0,...then.....the. multipication..product..will...be...also...ZERO..
.Otherwise,there..will....not..be..agreement...or....SOCIAL ...BARGAIN

At...any...case, the...(A – B)...BARGAINERS ...and..the...Community... – as..the.3rd...player.in..the..BARGAIN in.the..form..of....LAW , or, even.more.of..the." contract..social" (J.J.Rousseau,..1752) – ..must.." push"...their...own..." DISAGREEMENT ...POINTS ..as...far...as...possible– beyond..INDIVIDUAL EXPECTATIO NS..so..to..m.aximise..their..own...profits....and..all...of...them..to..m.ax..the..social..profit If ..this...will....hapen...then...a...new...situation..will..be..resulted.even.in..dt..period: ..the..Angels"...Moment

$$Angels\ '..Society$$
$$MAX\ ..(u_1 - t_1)(u_2 - t_2)(u_3 - t_3) \rightarrow [(u_1 - t_1)(u_2 - t_2)(u_3 - t_3)]' = 0$$
$$(u_1 - t_1) = MAX$$
$$(u_2 - t_2) = MAX$$
$$(u_3 - t_3) = MAX$$
$$u_i : utility\ ..ex.pectation$$
$$t : ..the..value\ ..the..players\ ..can..ex.pect\ ..to..recieve$$
$$if\ ..negotiatio\ n..break\ ..down$$
$$t_1 \rightarrow 0$$
$$t_2 \rightarrow 0$$
$$t_3 \rightarrow 0$$
$$u_i - t_i^* \approx u_1 - S_i$$

$$t_i^* \approx S_i$$

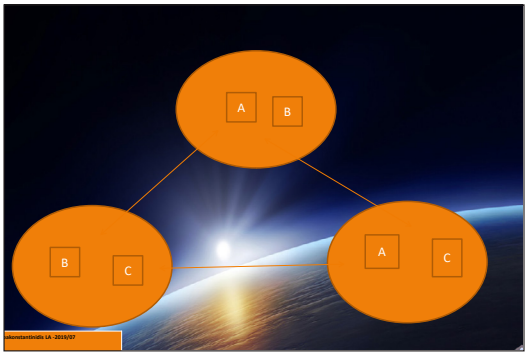


Figure 4.Each of the Three Taking Part in a Bargain Prevents Possible Collusion of the Other Two

Special Application

Rational Reasoning Loop Capture

One of the most exciting and brilliant case, is that from Stephan Ternyik example:

There are many famous thought experiments, serving as complex metaphors of living reality, but resolving any vital paradox in science and life requires to understand the levels of whole interplay. In other words, it is not easy to teach smart people.

Not educated people have their greatest (tragic) life problem in the process of (not) learning to learn, i.e. to getting into any loop of learning, e.g. with respect to basic literacy, technical skills and intrinsic motivation. Every learning process (animal, machine, human) is a function of loop levels (single, double, triple), structurally directed towards new experiences of internally representing the outer world, i.e. our psyche creates attributes for perceived information by somatic, mental and conscious processing stages. The drama of smart and very educated people is the rational reasoning loop capture, which can become a mental prison for body and mind. The empirical rationalist method (feeling, thinking, deciding) is a creative way to split the scientific ego (self-interest) from the living soul (microcosm, 'mirror' of the universe) i.e. to not getting captured by a certain loop, it is a methodical tool with a defined reach, not more, e.g. learning by doing. Reaching: The Angel's Point of all our re-searches into matter in motion leads to altruism, love and transcendence by the living spirit in our mortal human (earthly) body. These higher ideas of creativeness and the free human spirit may be a modern form of. But this path of human inquiry will definitely help to staying sane in a crazy world as the true researcher tries to connect to 'the higher and eternal upper force' in all life and matter, without getting captured in any loop of learning and knowledge acquisition.

Special case: Teaching smart people: conflict orders- the catch-22 case.

Any company that aspires to succeed in the tougher business environment of the 1990s must first resolve a basic dilemma: success in the marketplace increasingly depends on learning, yet most people don't know how to learn.

Most companies not only have tremendous difficulty addressing this learning dilemma, they aren't even aware that it exists. The reason: they misunderstand what learning is and how to bring it about. As a result, they tend to make two mistakes in their efforts to become a learning organization.

First, most people define learning too narrowly as mere "problem solving," so they focus on identifying and

correcting errors in the external environment. Solving problems is important. But if learning is to persist, managers and employees must also look inward. They need to reflect critically on their own behavior, identify the ways they often inadvertently contribute to the organization's problems, and then change how they act. In particular, they must learn how the very way they go about defining and solving problems can be a source of problems in its own right.

It is coined the terms "single loop" and "double loop" learning to capture this crucial distinction. To give a simple analogy: a thermostat that automatically turns on the heat whenever the temperature in a room drops below 68 degrees is a good example of single-loop learning. A thermostat that could ask, "Why am I set at 68 degrees?" and then explore whether or not some other temperature might more economically achieve the goal of heating the room would be engaging in double-loop learning.

Highly skilled professionals are frequently very good at single-loop learning. After all, they have spent much of their lives acquiring academic credentials, mastering one or a number of intellectual disciplines and applying those disciplines to solve real-world problems. But ironically, this very fact helps explain why professionals are often so bad at double-loop learning.

Put simply, because many professionals are almost always successful at what they do, they rarely experience failure. And because they have rarely failed, they have never learned how to learn from failure. So whenever their single-loop learning strategies go wrong, they become defensive, screen out criticism and put the "blame" on anyone and everyone but themselves. In short, their ability to learn shuts down precisely at the moment they need it the most.

The propensity among professionals to behave defensively helps shed light on the second mistake that companies make about learning. The common assumption is that getting people to learn is largely a matter of motivation. When people have the right attitudes and commitment, learning automatically follows. So companies focus on creating new organizational structures compensation programs, performance reviews, corporate cultures and the like that are designed to create motivated and committed employees.

But effective double-loop learning is not simply a function of how people feel. It is a reflection of how they think that is, the cognitive rules or reasoning they use to design and implement their actions. Think of these rules as a kind of "master program" stored in the brain, governing all behavior. Defensive reasoning can block learning even when the individual commitment to it is high, just as a computer program with hidden bugs can produce results exactly the opposite of what its designers had planned.

Questionnaire

The study has been conducted to different samples (rural and urban) seven rural and seven urban areas of Peloponnese from January 1st to August 31, 2020.

The Urban Areas Research, Sample 313

Sample from the areas below:

Table 1

S. No.	Urban Areas
1	Tripoli
2	Sparti
3	Nafplio
4	Patra
5	Arcadia
6	Egio
7	Kalamata

A_1 Sexes' Group

Table 2

	Men	Women	
Urban	200	113	313

A_2, Age Group

Table 3

Age Group	Frequence	%
Under 12 years old	-	-
12-17 years old	27	8,60
18-24 years old	8	2,55
25-34 years old	17	5,40
35-44 years old	29	9,20
45-54 years old	33	10,54
55-64 years old	78	24,00
65-74 years old	90	27,40
75+	31	9,99
Total	313	100

A_3 Educational Level

Table 4

S. No.	Educ Level	Men	Women
1.	Primary	61	45
2.	High	82	43
3.	Un. Degree	45	17
5.	Specification	7	3
6.	Ph.D	5	5
7.	Postdoctoral	-	-
	Total	200	113

313 answers to:

- One (1) Open-Ended and
- Ten close-ended questions

The format of a typical five-level Likert item, for example, could be:

- Strongly disagree
- Disagree
- Neural
- Agree
- Strongly agree

Theoretical View

Example-Steps:

$$\chi_c^2 = \sum_{i=1}^{k} \frac{(O_i - E_i)^2}{E_i}$$

$$E = \frac{(row..total)(column..total)}{grand..total}$$

$$a : level..of..significance...usually,...0,05$$

$$df = v : ..(rows - 1)(columnes - 1)$$

$$de.grees..of...freedom,...(df)$$

$$df = (R-1)\times(C-1)$$

We calculate the degrees of freedom (df). $c = de.grees..of...freedom,...(df)$

$$df = (R-1)\times(C-1)$$

The test with which we do such a case test is called control of good fit.

In this section we will also get to know our independence test allows us to respond to problems such as the following, which relate to control of the independence of two characteristics/ variables.

The null hypothesis H_0 The frequencies of the three types of study are not different between them (bilateral control).

$$\chi_n^2 = \sum_{i=1}^{k} \frac{(O_i - E_i)^2}{E_i} \succ \chi^2_{\kappa-1,a}$$

Alternative hypothesis: The frequencies of the three types of study are different between them:

$$\chi_n^2 = \sum_{i=1}^{k} \frac{(O_i - E_i)^2}{E_i} \prec \chi^2_{\kappa-1,a}$$

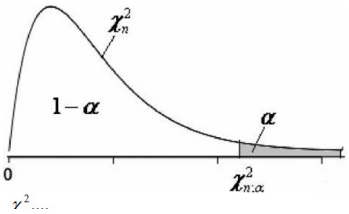
Table 5.Behavior Under Order

		Strongly Disagree	Disagree	Neural	Agree	Strongly Agree	Total
1.1	I accept the director's orders	11	13	4	8	3	39
1.2	I accept selective instructions	10	8	1	4	11	34
1.3	I only accept orders that I believe I will accomplish	8	11	2	9	2	32
1.4	I only accept certain commands that I think is closer to my psychology	4	4	5	8	8	29
1.5	I accept collective orders coming from Directory	1	4	-	8	18	31
.1.6	I accept orders from different Directors	3	7	1	4	13	28
1.7	I accept the Director orders except those of the "catch-22 situation"	-	-	3	12	14	29
1.8	I accept orders which are contrary to my beliefs		2	5	8	15	30
1.9	I accept orders which annoy me	4	3	5	5	16	33
1.10	I accept any order	18	6	8	-	-	28
Total		**48**	**58**	**34**	**65**	**97**	**313**

$$\text{Expected frequency} = E_{ij} = \frac{(row..total)(column..total)}{grand..total}$$

$$OBSERVED(OBS)..FREQUENCE - EXPECTED(EXP)..FRE : ...1-1$$

Degrees of Importance



From this, critical value is taken for each cell (we choose, 1.1 and 1.2 in our case)

$\chi_n^2 \ldots$

$df = k - 1$

$a = the.upper..p.oint..of..\chi..distribution$

In our case

$a : level..of.significance..usually,...0{,}05$

$df = v : ..(rows - 1)(columnes - 1) = (2-1)(5-1) = 4$

Table 6.Critical Values

n	α = 0·995	α = 0·99	α = 0·975	α = 0·95	α = 0·05	α = 0·025	α = 0·01	α = 0·005
1	0.000	0.000	0.001	0.004	3.841	5.024	6.635	7.879
2	0.010	0.020	0.051	0.103	5.991	7.378	9.210	10.597
3	0.072	0.115	0.216	0.352	7.815	9.348	11.345	12.838
4	0.207	0.297	0.484	0.711	9.488	11.143	13.277	14.860
5	0.412	0.554	0.831	1.145	11.070	12.832	15.086	16.750
6	0.676	0.872	1.237	1.635	12.592	14.449	16.812	18.548
7	0.989	1.239	1.690	2.167	14.067	16.013	18.475	20.278
8	1.344	1.647	2.180	2.733	15.507	17.535	20.090	21.955
9	1.735	2.088	2.700	3.325	16.919	19.023	21.666	23.589
10	2.156	2.558	3.247	3.940	18.307	20.483	23.209	25.188
11	2.603	3.053	3.816	4.575	19.675	21,920	24.725	26.757
12	3.074	3.571	4.404	5.226	21.026	23.337	26.217	28.300
13	3.565	4.107	5.009	5.892	22.362	24.736	27.688	29.819
14	4.075	4.660	5.629	6.571	23.685	26.119	29.141	31.319
15	4.601	5.229	6.262	7.261	24.996	27.488	30.578	32.801
16	5.142	5.812	6.908	7.962	26.296	28.845	32.000	34.267
17	5.697	6.408	7.564	8.672	27.587	30.191	33.409	35.718
18	6.265	7.015	8.231	9.390	28.869	31.526	34.805	37.156
19	6.844	7.633	8.907	10.117	30.144	32.852	36.191	38.582
20	7.434	8.260	9.591	10.851	31.414	34.170	37.566	39.997
21	8.034	8.897	10.283	11.591	32.671	35.479	38.932	41.401
22	8.643	9.542	10.982	12.338	33.924	36.781	40.289	42.796
23	9.260	10.196	11.689	13.091	35.172	38.076	41.638	44.181
24	9.886	10.856	12.401	13.848	36.415	39.364	42.980	45.558
25	10.520	11.524	13.120	14.611	37.652	40.646	44.314	46.928
26	11.160	12.198	13.844	15.379	38.885	41.923	45.642	48.290
27	11.808	12.878	14.573	16.151	40.113	43.194	46.963	49.645
28	12.461	13.565	15.308	16.928	41.337	44.461	48.278	50.994
29	13.121	14.256	16.047	17.708	42.557	45.722	49.588	52.335
30	13.787	14.953	16.791	18.493	43.773	46.979	50.892	53.672
40	20.706	22.164	24.4331	26.509	55.756	59.342	63.691	66.766
50	27.991	29.708	32.3574	34.764	67.505	71.420	76.154	79.490
60	35.535	37.485	40.4817	43.188	79.082	83.298	88.379	91.952
70	43.275	45.442	48.7576	51.739	90.531	95.023	100.425	104.215
80	51.172	53.540	57.1532	60.392	101.879	106.629	112.329	116.321
90	59.196	61.754	65.6466	69.126	113.145	118.136	124.116	128.299
100	67.328	70.065	74.2219	77.930	124.342	129.561	135.807	140.169

Table 7.Behavior Under Order

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1.2	I accept selective instructions	11	8	1	4	11	34
1.3	I only accept orders that I believe I will accomplish	8	11	2	9	2	32
1.4	I only accept certain commands that I think is closer to my psychology	4	4	5	8	8	29
1.5	I accept collective orders coming from Directory	1	4	-	8	18	31
.1.6	I accept orders from different Directors	3	7	1	4	13	28
1.7	I accept the Director orders except those of the "catch-22 situation"	-	-	3	12	14	29
1.8	I accept orders which are contrary to my beliefs		2	5	8	15	30
1.9	I accept orders which annoy me	4	3	5	5	16	33
1.10	I accept any order	18	6	8	-	-	28
Total		**48**	**58**	**34**	**65**	**97**	**313**

Table 8.For the 1.1 and 1.2 Rows We Have

		Strongly Disagree	Disagree	Neural	Agree	Strongly Agree	Total
1.1	I accept the director's orders	11	13	4	8	3	39
1.2	I accept selective instructions	10	8	1	4	11	34
Total		**48**	**58**	**34**	**65**	**97**	**313**

Table 9

		Strongly Disagree	Disagree	Neural	Agree	Strongly Agree	Total
1.1	I accept the director's orders	11 (8.59*	13 (7.22)	4 (4.22)	8 (8.09)	3 (10.84)	39
1.2	I accept selective instructions	11 (5,29)	8 (6,38)	1 (3,74)	4 (7,15)	11 (10,67)	34
Total		**48**	**58**	**34**	**65**	**97**	**313**

$$E = \frac{(row..total)(column..total)}{grand..total}$$

$$E_1 = \frac{69 \times 39}{313} = 8{,}59\ ,\ E_2 \frac{58 \times 39}{313} = 7{,}22 \quad E_3 = \frac{34 \times 39}{313} = 4{,}23\ E_4 = \frac{65 \times 39}{313} = 8{,}09$$

$$E_5 \frac{87 \times 39}{313} = 10{,}84$$

Expected Frequencies

$\frac{34}{313} = 0{,}11$ *obs

Table 10

48	58	34	65	97
5,29	6,38	3,74	7,15	10,67

Table 11.Question 1.1 Accept the Director's Orders

	Strongly Disagree	Disagree	Neural	Agree	Strongly Agree	Total
observed	11	13	4	8	3	39
expected (H_0)	8,59	7,22	4,22	8,09	10,84	38,96
observed-expected	2,41	5,78	0,22	0.9	7,84	17,15
(observed-expected)^2	5,80	33,40	0,05	0,81	61,46	101,52
(observed-expected)^2/expected	0,67	4,62	0,011	0,10	5,67	11,07

Table 12.Critical Values

n	α = 0·995	α = 0·99	α = 0·975	α = 0·95	α = 0·05	α = 0·025	α = 0·01	α = 0·005
1	0.000	0.000	0.001	0.004	3.841	5.024	6.635	7.879
2	0.010	0.020	0.051	0.103	5.991	7.378	9.210	10.597
3	0.072	0.115	0.216	0.352	7.815	9.348	11.345	12.838
4	0.207	0.297	0.484	0.711	9.488	11.143	13.277	14.860
5	0.412	0.554	0.831	1.145	11.070	12.832	15.086	16.750
6	0.676	0.872	1.237	1.635	12.592	14.449	16.812	18.548
7	0.989	1.239	1.690	2.167	14.067	16.013	18.475	20.278
8	1.344	1.647	2.180	2.733	15.507	17.535	20.090	21.955
9	1.735	2.088	2.700	3.325	16.919	19.023	21.666	23.589
10	2.156	2.558	3.247	3.940	18.307	20.483	23.209	25.188
11	2.603	3.053	3.816	4.575	19.675	21,920	24.725	26.757
12	3.074	3.571	4.404	5.226	21.026	23.337	26.217	28.300
13	3.565	4.107	5.009	5.892	22.362	24.736	27.688	29.819
14	4.075	4.660	5.629	6.571	23.685	26.119	29.141	31.319
15	4.601	5.229	6.262	7.261	24.996	27.488	30.578	32.801
16	5.142	5.812	6.908	7.962	26.296	28.845	32.000	34.267
17	5.697	6.408	7.564	8.672	27.587	30.191	33.409	35.718
18	6.265	7.015	8.231	9.390	28.869	31.526	34.805	37.156
19	6.844	7.633	8.907	10.117	30.144	32.852	36.191	38.582
20	7.434	8.260	9.591	10.851	31.414	34.170	37.566	39.997
21	8.034	8.897	10.283	11.591	32.671	35.479	38.932	41.401
22	8.643	9.542	10.982	12.338	33.924	36.781	40.289	42.796
23	9.260	10.196	11.689	13.091	35.172	38.076	41.638	44.181
24	9.886	10.856	12.401	13.848	36.415	39.364	42.980	45.558
25	10.520	11.524	13.120	14.611	37.652	40.646	44.314	46.928
26	11.160	12.198	13.844	15.379	38.885	41.923	45.642	48.290

27	11.808	12.878	14.573	16.151	40.113	43.194	46.963	49.645
28	12.461	13.565	15.308	16.928	41.337	44.461	48.278	50.994
29	13.121	14.256	16.047	17.708	42.557	45.722	49.588	52.335
30	13.787	14.953	16.791	18.493	43.773	46.979	50.892	53.672
40	20.706	22.164	24.4331	26.509	55.756	59.342	63.691	66.766
50	27.991	29.708	32.3574	34.764	67.505	71.420	76.154	79.490
60	35.535	37.485	40.4817	43.188	79.082	83.298	88.379	91.952
70	43.275	45.442	48.7576	51.739	90.531	95.023	100.425	104.215
80	51.172	53.540	57.1532	60.392	101.879	106.629	112.329	116.321
90	59.196	61.754	65.6466	69.126	113.145	118.136	124.116	128.299
100	67.328	70.065	74.2219	77.930	124.342	129.561	135.807	140.169

Table 13

48	58	34	65	97
EXP: 5,29	6,38	3,74	7,15	10,67

Table 14

		Strongly Disagree	Disagree	Neural	Agree	Strongly Agree	Total
1.1	I accept the director's orders	11 (8.59*)	13 (7.22)	4 (4.22)	8 (8.09)	3 (10.84)	39
1.2	I accept selective instructions	11 (5,29)	8 (6,38)	1 (3,74)	4 (7,15)	11 (10,67)	34
total		48	58	34	65	97	313

Table 15

	Strongly Disagree	Disagree	Neural	Agree	Strongly Agree	Total
f_O observed	10	8	1	4	11	34
f_0 expected (null)	7,49	6,38	3,74	7,15	10,67	33,99
(observed-expected)	2,51	1,62	|2,74|	3,15	0,33	10,35
(observed-expected)^2	6,30	2,62	7,50	9,92	0,11	26,45
(observed-expected)^2/ expected	0,84	0,41	2,00	1,38	0,01	4,64

$$If$$
$$\chi^2_{calc} \succ \chi^2_{critical} \cdots$$
$$then$$
$$accept..the..null...hypothesis$$

In this case

$$11{,}07 \succ 9{,}488$$

INDEED,

$$\chi_n^{\,2} \succ \chi_{k-1}^{\,2}{}_{0{,}05{,}4}$$

Then we accept the null hypothesis H_0

Question 1.2 I accept selective instructions

$$\chi_c^{\,2} = \sum_{i=1}^{k} \frac{(O_i - E_i)^2}{E_i}$$

Expected Frequencies

$$\frac{34}{313} = 0{,}11$$ *obs (1-5)

In this case (1.2)

$$\chi^2_{critical} \succ \chi^2_{calcul}$$
$$.....9{,}488 \succ 4{,}64$$

we..reject..the..null...hypothesis

- *i. Formulate H_0 and H_1 that is;*

H_0 : variables X and Y are independent (that is, there is no relationship between the two variables).

H_1: variables X and Y are dependent (that is, the variables are related) .

ii. Set the level of significance α.

iii. Test Statistic: $\chi^2 = \sum_j^c \sum_i^r \frac{(o_{ij} - e_{ij})^2}{e_{ij}}$

Open Ended Question (OEC)

Do you believe that conditions in urban area could be changed-why?

lap -ST

20-11-20

References

1. General idea –plus the math concept.
2. A catch-22 is a paradoxical situation from which an individual cannot escape because of contradictory rules or limitations. The term was coined by Joseph Heller, who used it in his 1961 novel Catch-22. An example is: In needing experience to get a job..."How can I get any experience until I get a job that gives me experience?" – Brantley Foster in The Secret of My Success.
3. In needing experience to get a job How can I get any experience until I get a job that gives me experience?" Brantley Foster in The Secret of My Success.
4. Catch-22s often result from rules, regulations, or procedures that an individual is subject to, but has no control over, because to fight the rule is to accept it. Another example is a situation in which someone is in need of something that can only be had by not being in need of it (e.g.: the only way to qualify for a loan is to prove to the bank that you don't need a loan). One connotation of the term is that the creators of the "catch-22" situation have created arbitrary rules in order to justify and conceal their own abuse of power. Catch-22 is a satirical war novel by American author Joseph Heller. He began writing it in 1953; the novel was first published in 1961. Often cited as one of the most significant novels of the twentieth century,[2] it uses a distinctive non-chronological third-person omniscient narration, describing events from the points of view of different characters. The separate storylines are out of sequence so the timeline develops along with the plot. The novel is set during World War II, from 1942 to 1944. It mainly follows the life of antihero Captain John Yossarian, a U.S. Army Air Forces B-25 bombardier. Most of the events in the book occur while the fictional 256th US Army Air Squadron is based on the island of Pianosa, in the Mediterranean Sea west of Italy, though it also covers episodes from basic training at Lowry Field in Colorado and Air Corps training at Santa Ana Army Air Base in California. The novel examines the absurdity of war and military life through the experiences of Yossarian and his cohorts, who attempt to maintain their sanity while fulfilling their service requirements so that they may return home.
5. Papakonstantinidis LA, 2002.
6. Ignacio Ramonet:
   - 1989 : La Communication victime des marchands
   - 1996 : Nouveaux pouvoirs, nouveaux maîtres du monde (French: New Powers, New World Masters)
7. Scribd Acquires SlideShare https://www.linkedin.com/help/linkedin/answer/124443.