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CAN A MACHINE ADMINISTER JUSTICE? THE STATE OF DEVELOPMENT OF AI & LAW IN REPLACING THE JUDICIAL DECISION-MAKING PROCESS

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Abstract

On account of the use of certain internet technology tools (henceforth, ICT), the argument has been stressed, that the action of adjudicating legal disputes –the actual rendering of a justifiable decision affecting the adjudication of a legal right to one of the disputing parties- can be undertaken by artificial intelligence (henceforth, AI) –regardless of the type, nature, or complexity of said disputes. That an AI agent can administer justice is put into question on the basis of the ethics of argumentation. Dialogue, according to argumentation theory, is not undertaken within a normative void. It is rather undertaken by the necessary abidance of certain norms (dialectical truths and contradictions). Rational nature and private property are two of the most important of these norms. This paper presents reasons, based on these two, in order to deny the possibility of argumentation, and thus, of justice administration, to AI machines.

Keywords*: online arbitration; AI & Law; argumentation ethics.*

INTRODUCTION

Online dispute resolution (or, ODR) is the concept that encompasses an array of alternative dispute resolution mechanism (or, ADR), that are conducted with various degrees of internet communication tools (or, ICT) integration into their functioning. As means to assist or to replace legal court procedures, the term includes online mediation, negotiation, and arbitration.

The focus of this presentation is online arbitration, and the question of whether an intelligent machine can deliver justice in the context of interpersonal legal disputes.

Online arbitration is merely a subcategory of the general concept of arbitration. It is, simply put, another manifestation of arbitration. Its gateway is a mutual agreement to exclude the use of courts in favor of a private dispute resolution mechanism of an adjudicative kind. Parties to the dispute choose the arbitrator, which is delegated to adjudicate the dispute, with a more or less strict observance of due process elements, aiming at the production of a binding final decision. While it participates of the essential elements of arbitration, online arbitration also places itself at a certain distance from that concept by integrating the internet in the production of an enforceable decision. It is a private manifestation of justice administration, in the production of which, internet technology is economically integrated as a capital good.

Forms of AI and dispute resolution

The subfield of law that studies the relationship between intelligent technologies and law is usually referenced as AI & Law. Within this particular field, the many uses AI would have in ODR in general, and online arbitration in particular, have been the object of research (A. R. Lodder & Zelznikow, 2005; Peruginelli & Chiti, 2002). In order to discern those uses, we have to make a brief distinction between forms of AI. On the one hand, we have narrow AI, which can be understood as software that can solve problems in a single domain. In this particular form, by previously setting some rules in the form of "if A, then B, provided C" the AI agent would recognize some conditions that will in turn trigger certain results. It will, for example, turn on WIFI on our cell phones, when, and if, we enter certain rooms.

On the other hand, we found the general form of AI, which is supposed to mirror human intelligence, as the AI agent is expected to apply knowledge and skills in different contexts; it is expected to learn and solve problems. A truly intelligent computer would be expected to figure out for itself what is *important*, what would be *meaningful*, and "act" accordingly.

Reviewing the ways AI can be integrated in online arbitration, we can observe this distinction. In this sense, it has been discussed: how online arbitration can be produced either by being *assisted by*, or *based on* technology.

AI assisting in judging

On the one hand, AI is conceived in a way, in which the role of technology is limited to the provision of an adequate and secure medium of communication and information exchange.[1] From this, it can be understood, that technology is there to *assist* the function of adjudicating the dispute, of rendering the decision that gives resolution to the dispute by adjudicating to one of the parties a legal right. Being of assistance for the arbitrator –or the judge- technology does not replace him.

In the particular case of online arbitration, it has been discussed how AI tools are devised to assist or to support the task of the arbitrator. One of the most critical questions in this regard, is which part of the arbitration process can be automatized. Such research covers the ways an AI tool can process the information presented to the arbitrator for the later rendering of decision. Arguably, concerning AI systems seeking to support the functioning of online arbitration, it is implied that but one specific function is not capable of automatisation, because it only can be undertaken by a rational being: *the rendition of the final and binding decision*.

In this regard, Lodder and Thiessen came up with an argumentation support tool which is meant to support primarily arbitration, and secondarily negotiation and mediation (A. Lodder & Thiessen, 2003, p. 9). Basically the tool organizes the statements given by the parties and presents them to the arbitrator in a systematized form. Statements are presented in the "natural language" of the parties. Parties using the argumentation tool can make one of the following statements: An "Issue," which is a "statement that

[1] (Wahab, 2012) According to this author, on the other extreme of the scope of ODR it is found *"Technology –based ODR mechanisms where a fully-fledged application of cutting –edge technology is utilized to resolve disputes*". However, the use of artificial intelligence is in fact used in other ODR mechanisms, such as automated processes as blind bidding. Examples of providers behind these examples are Cybersettle and Smartsettle. See (Cortés, 2002)

initiates the discussion;" a supporting statement, which is each "statement entered by a party that supports statements of the same party;" and a responding statement, which is each "statement entered by a party that responds to statements of the other party" (A. Lodder & Thiessen, 2003, p. 9).

AI undertaking the judicial decision-making process

On account of a possibly deep integration of ICT into the production of online arbitration, however, the argument has also been stressed, that the action of adjudicating legal disputes –the actual rendering of a justifiable decision affecting the adjudication of a legal right to one of the disputing parties- can be undertaken by AI– regardless of the type, nature, or complexity of said disputes. This would place certain manifestation of online arbitration within the category of technology *based* ODR, where some sort of artificial intelligence application of a cutting degree of technology would be used to resolve disputes (Wahab, 2012, p. 402).

In this particular sense, one of the possible uses of AI in online arbitration is precisely a tool that is capable of doing what the arbitrator is ultimately called upon doing: *judging*. These are known as "*expert*" or "*knowledge* (based)" systems(A. Lodder & Thiessen, 2003, p. 4). Such expert systems offer logical tools for the modeling of legal arguments that can deal with "*undercutting and rebutting arguments, **weighing of principles, reasoning about rules**, lines of argumentation, and commitment and burden of proof.*"[2]

Replacing the third neutral has been -and continues to be- a goal within the AI & Law. It is generally held that its ultimate goal consists of "*trying to solve by computer any problem, that a human can solve, better, faster, more consistently, without getting tired, etc.*"(A. Lodder & Thiessen, 2003, p. 3). Some authors do suggests, that there is a certain trend, according to which, in the future, ODR in general will develop to a point in which the degree of integration of ICT in the different mechanisms considerably rises –even to a point where artificial intelligence will deliver dispute resolution.

For instance, one particularly known author in this area argues as follows:

> *"(…) it is clear that ICT is developing increasingly faster while ODR service providers are becoming more sophisticated, intuitive and professional. It can be argued that the ODR of the future will be of greater quality, will cater for specific types of consumer disputes, will be predominantly public-operated or monitored, it will be compulsory, largely automated and it will be able to provide many of the functions that currently only a human neutral party can do. Such a system would have to be supported by artificial intelligence, economic incentives and legal standards"* (European Commission – Directorate General for Justice, 2015; Katsh & Wing, 2006).

On the other hand, there is legally no obstacle for the possibility of AI administering justice, especially in the context of arbitration. For example, in Germany, there is no legal obstacle for appointing an AI agent,

[2] Emphasis not original.

as no legal provision of the German arbitration law expressly forbidding it. Presumably, the many attempts to replace the decision-making process of the judge by machine learning systems, in part, take this into consideration. Another encouraging fact for AI replacing the judicial decision-making process is that, currently, the European Parliament is studying the possibility to grant robots legal status (European Parliament, 2017).

Following this line of thought, there is merit in discussing the challenges that would have to be raised against the notion of a computer administering justice. Based on what has been said above, there is indeed evidence of scholarly work supporting the notion that the role of the judge can be replaced by means embodying high degrees of technology capable of intelligence (Gray, Brookfield, & McJohn, 1998).

Examples of research: AI replacing the third neutral –AI, classical, and non-monotonic logic

In the course of our research, we have come across certain arguments that cast serious doubts upon the notion that AI can successfully replace the arbitrator, or the judge. Notwithstanding, there are some AI & Law research projects that would appear to have shown advances in that regard.

One of them is the attempt to standardize procedures used by courts according to computerized models. It consists in having a program being fed the relevant features of the procedure involved. The procedure is then created -and managed- by the computer according under the conditions of the code written for that purpose. In each case, it would be necessary to insert individual data of the case, and the outcome should be automatically rendered. A limit for such types of automatisation would be the complexity of the case. It would only work for simple procedures, where the procedural steps are few. Another important limit is that there should not be so many alternatives that are possible during the procedure in which a choice has to be made. According to Taruffo, if at any moment, the procedure shall be carried on following different paths, the software must be written taking into consideration how many paths are possible, and what exactly triggers them. Still, another limit is the repetitiveness of the procedure. The procedure cannot vary in concrete, similar cases, as this would make it difficult to formalize it in a complete manner, or to adapt it to different situations (Taruffo, 1998, pp. 317–319).

Probably the one representing higher promises would be the analysis of judicial reasoning focusing upon the arguments used in the argumentative process of making and to justifying decisions.(Taruffo, 1998, p. 322) What is so interesting about it is that it deals directly with the complexity that characterizes the judicial decision-making-process. It deals with the use of precedents, the articulation of legal arguments, the solution to the conflicts between such arguments, the chain of legal arguments, etc. This kind of research suggests that previous attempts to imitate the reasoning of the judge have failed. As a matter of fact, such process is rather complex, and heterogeneous. In sum, those attempts on the side of AI & Law are featured by a very clear insistence of using **monotonic, or classical logic** rules to model a kind of reasoning that resists to be modeled in that manner. The most important consideration here is that the process of rendering an adjudicative decision calls for *defeasible inference*. That the one making the argument draws conclusions defensibly means, that he reserves the right to retract them when confronted with new information. The patterns of this kind of reasoning are beyond classical logic, which, by its very

nature, does not allow for retraction of inferences. This is presented, in principle, as the main reason, why these attempts have failed in the past.

In a very drastic change, this kind of AI & Law research uses, also, logical tools, but rather non-monotonic logic.[3] Research suggests that this kind of logical tools –dealing directly with defeasible inferences- promises to tackle the complexity of the dialogical structure of the judicial decision-making process. It could be argued, that, on account that it allows for retraction of inferences whenever new information is presented, it mimics argumentative dialogue. It does so by taking into consideration that such reasoning process has as one of its fundamental factors the advancement of arguments and counter-arguments. It is supposed to *understand* the dynamics featuring of judicial procedures.

For example, one of the general points in Hage's work is that non-monotonic logical rules are applicable, because legal discourse is composed of at least two types of reasoning. On the one hand, there is rule-based reasoning, in which a rule is applied if its conditions are satisfied. Rule conclusion is applied to the action as the result of a syllogistic deduction. On the other hand, there is principle-based reasoning, from which a particular case is to be classified by an evaluative term. The principle in question has a dimension of weight or importance, which reflects the value-laden reasoning that the judge must undertake (Hage, 1996). If an enforceable decision is expected to be rendered by an AI agent in online arbitration, it must be in the capacity to evaluate and anticipate the value judgment that a judge at a national court would undertake in order to grant or not leave of enforcement.

Casting doubt upon the notion of AI replacing the third neutral

The effort behind this last example notwithstanding, indeed, there are various and complex factors influencing judicial decision-making, such as the format and size of the judicial body, and its composition. Additionally, the many procedural rules that come into play must be taken into consideration, as the factual and legal circumstances of the cases handled by the judge(s); the available evidence, etc. (Taruffo, 1998, p. 311).

The principal reason to doubt the effectiveness of AI in delivering justice is, that judicial decision-making can be considered as a set of choices among alternative hypothesis of the possible decisions to the case at hand. By alleging their own version of the case, each of the parties proposes a decision, and the judge or arbitrator can either choose one of them -or come up with one of his own. At the end, it should be the best argument that is going to be adopted by the judge, making a binding decision out of it (Taruffo, 1998, p. 312).

[3] A dissertation about the meaning of non-monotonic logic obviously escapes the purpose of this work. For a simple explanation of this concept, an encyclopedic explanation should suffice. Non-monotonic logic makes reference to a type of logical tools that are devised in order to capture and represent defeasible inference. This concept, in turn, makes reference to those inferences in which the one doing the reasoning gets to conclusions in a tentative manner, meaning by this that these can be reformulated whenever further information appears. This kind of inferences, of course, resembles that of legal arguments. See (Stanford University. & Center for the Study of Language and Information (U.S.), 1997)

The choice itself of the possible decision –among the presented ones by the parties- is a rather complex task. Taruffo undertakes a valuable effort to summarize the various complications that arise at this point. In particular, it is worth mentioning that a clear determinant for such high degree of complexity is the ***dialogical structure*** of the reasoning of the judge choosing between the various possible solutions to the legal and factual issues[4] proposed to him (Taruffo, 1998, pp. 312–313). **Judicial decision-making, is, after all, a dialogue**. According to Taruffo, there are at least three explanations for such a dialogical structure. One of them is, that each of the parties proposes opposing theories of the case in the course of the procedure, which in turn reflect their interpretation of the legal and factual issues. In fact, this dialogical structure is carried on by the parties through the whole procedure, until a decision is rendered. It is the interpretation of the parties of the legal and factual issues from which a solution is drafted and presented to the judge.

Another explanation for this dialogical structure is the fact that any resulting decision, based on the arguments of the parties, will have effects between them. By this it is meant that an argument is going to trigger a counterargument. And in this sense, the judge must compare such arguments and counterarguments, statements and objections, affirmations and negations undertaken through the process. The judge will then choose the most reliable answers to the legal and factual issues the case.

An additional reason is that the procedure is not only a dialogue between the parties, but, as Taruffo argues, of the judge with himself. The judge starts the dialogue with a proposed decision, and he "discusses" with himself if the decision, once rendered, would be correct or not.

Moreover, after deciding, the judge himself, in all cases, must face possibility of ***justifying*** his decision – either to the parties, another judge, and to himself. Indeed, in those cases, the opinion rendered by the judge should show that the decision has been *reasoned*. It assumes the decision as a starting point, and then continues to demonstrate that his decision is right, based upon a set of reasoned justificatory arguments(Taruffo, 1998, p. 314).

According to Taruffo, the history of AI & Law in regard of the specific task of mimicking the judicial decision-making process can be presented as a long history of *unsuccessful* attempts to represent it as a chain of syllogistic steps. On the one hand, those were in essence rough in the main attempt to computerize the very much complex nature of such decision-making process. It has not been possible to produce reliable models of the judge reasoning, for example. It may be considered that such decision-making

[4] "*Legal issues are those dealing with the choice of the legal rule(s) governing the case and with the interpretation and application of such rule or rules. Such issues include for instance the reference to written legal provisions, the use of precedents, the use of legal canons, the use of legal arguments, and so forth. In a sense, determining the possible solutions of a legal issue requires dealing with a complex group of related legal questions and to find out the possible answers to such questions. The set of such questions and answers is the "legal context" within which the final decision of the relevant legal matters will be found. Factual issues concern the reliability (i.e., the truth or falsehood) of the statements about the material facts of the case. The questions of fact are solved on the basis of the evidence presented, of the proofs emerging from such evidence and of the inferences connecting evidence and factual statements. Assuming that the "issues of fact" are a set of factual statements, each possibly being true or false, one may say that the set of such statements and of their possible values of truth is the "factual context" within which the final decision concerning the facts of the case will be chosen*." (Taruffo, 1998, pp. 312–313)

process is "*so complex, variable, uncertain, fussy and value-laden, that it could never be reduced to logical models* (Taruffo, 1998, pp. 316–317). Any logical model, in order to present something –at best- close to resemble such process would have to incur in such degree of simplification –abstracting from those important features of the process that would not be possible to reduce to logical models- that they would be inappropriate as a prescriptive model for judges.

Ethics of argumentation

We must pay especial attention to the dialogical structure of judicial decision-making, as it is the most problematic element when considering replacing the arbitrator with AI. We should say in advance, though, that we are making reference to the process through which a judicial decision is reached. After the decision has been rendered, it should be taken into consideration, it is not a matter of dialogue whether it is going to be complied or not. If it is a justified decision, its compliance is induced by force –as it is a question of law.

In a contract dispute, for instance, one of the exchanging parties can argue that a particular action of its counterparty is not justified within the terms of the contract. They engage in dialogue, exchanging arguments. If it is the case, that if they cannot solve their difference by themselves, they can delegate this function onto a third neutral. Let us imaging that this one is an online arbitrator. Since this moment on, and until a decision is rendered by the arbitrator, the dialogue takes place between him and the parties. Indeed, in argumentation, at least two individuals seek to justify or to excuse an action or belief; to determine whether if it is an action one ought to undertake, or whether the circumstances of the case present sufficient reasons (like in the case of unjustified coercion) for excusing a person for doing something that is contrary to right.

It is critical for the proper understanding of argumentation, that when individuals are told or asked to do something, they are likely and in fact entitled to question ***why*** they ought to do it. Furthermore, it is also important to understand, that an exchange of arguments is a justificatory argumentation only if all the participants acknowledge certain facts, and abide by certain norms –norms that one cannot argue are invalid, because adherence to them is a necessary condition of engaging in argumentation. For this reason, we can argue that argumentation does not take place in a normative void (Van Dun, 2009, p. 3).

In a dialogue about anything, and in the particular dialogue taking place between the parties and the arbitrator, this one can tell the other ones, with the intention of presenting to them a serious proposition, that they ought not to argue, or that they ought not to take his argumentation seriously. By saying any of these, the arbitrator could not do so without destroying the point of making that argument. When the claim would be made by the arbitrator that the parties ought not to take his argumentation seriously, and this claim is not presented as a joke to them, then the opposite norm is simultaneously being presupposed as valid and binding, and as dialectically irrefutable: that they ought to take the argumentation of the arbitrator seriously.

As such, the point of argumentation is to make the counterparty understand the reasons and arguments for believing, saying, or doing something, in such a way that he comes around to the conclusion that believing, saying or doing it is justified as being in accordance with reason (Van Dun, 2009, p. 4).

While the arbitrator is engaged in dialogue with the parties, he cannot without contradiction maintain that he is, or that the parties are, not answerable, responsible personas. Following this line of thought, ***in any dialogue, the participants must accept it as a dialectical truth that each one of them is a being capable of reason, a rational being, a natural person.***

Along others, the participants must also accept it as a dialectical truth that they are able to communicate and argue with each other, and that each one of them is a separate person, capable of speaking his own mind, and entitled to do so.

In short, it is another *condition of possibility* for argumentation, the property right that each participant presupposes over his own body in order to command it to speak. Hence, property over one's own body is a necessary presupposition of any dialogue (Hoppe, 2010, pp. 149–156).

Indeed, argumentation is a specific form of action. As any action, it requires the allocation of scarce means. In this sense, it must be also taken into consideration that those means, which the rational person demonstrates as preferring by engaging in any exchange of arguments are those of private property. In this sense, private property, which is an exclusive attribute of natural persons, is the presupposition of argumentation as such. No one could possible propose anything, and no one could be convicted of any proposition by argumentative means, if a person's right to makes exclusive use of his physical body were not already presupposed. As argumentation, it can be argued that this property right that each of the participants of the judicial decision-making process is claiming must also be justified a priori, for anyone of them that would try to justify any norm whatsoever would already have to presuppose the exclusive right of control over his own body as a valid norm simply in order to say, as in the case of the arbitrator "I propose that party A has acted in a way that is justified by reason."

Being, then, that property over the means that make arguing possible is a necessary presupposition of any dialogue, the following insight is gain: that any AI machine is simple incapable of judging, since judging is only possible when preceded by an exchange of arguments, the presupposition of which is private property. Any machine, including an AI machine is not capable of owing anything. Instead, it is owned by a rational being.

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Reducing Cognitive Load for Pre-Service Science Teachers through Performance Supporting Program

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Abstract
This study aims to determine the effectiveness of performance supporting program for reducing pre-service science teachers' cognitive-loading, the participants are pre-service science teachers who enrolled in Educational Diploma at faculty of education, moreover those students are graduated from different faculties such as: medicine, pharmacy, science, and agriculture, additionally, they shift their career and want to be a science teachers, regarding the supporting teaching performance program will consider the natural of students and the cognitive-load principles, furthermore, the program will consists of sessions in the campus and online via platform, we design a cognitive-load scale to measure the cognitive loading after doing specific tasks, this study used a mixed-methods design (qualitative and quantitative), the results manifest that the effectiveness of using supporting teaching performance program for reducing cognitive load of pre-service science teachers.
Keywords: Cognitive load, Performance Supporting Program, pre-service science teachers.

1. Introduction

Cognitive load term began to appear with the appearance of the cognitive load theory by John Sweller in 1980 AD, based on his theory on the terminology of information processing theory, particularly in relation to working memory, which has a capacity of 5-9 elements (numbers-names-digits), and is considered a temporary repository, The information for a period between 15-18 seconds and runs in two directions, the first is to obtain information from the sensory memory, and code it to transfer it to the long-term memory, and the second is to retrieve information from the long-term memory (paas, sweller, 2012).

Further, (Kert & Kurt, 2012) state that a Supportive program considering cognitive load is one of the instructional variables that designers need to consider in designing e-learning.

Regarding, performance support term which is based on Vygotsky's social constructivist theory, as Vygotsky stresses the importance of social interactions in learning and developing the performance of learners, and the important role of teachers and learners themselves in teaching one another, further, social

constructivism assumes that learners build their knowledge firstly, then they need to support from others to accomplish the knowledge-building process (Verenikina, 2010).

Therefore, this study aims to deliver a supporting performance program in order to reduce cognitive load of pre-service science teachers, in other words, how the principles of supporting could reduce cognitive load.

1.2.Research Problem:

The Research Problem is "increasing cognitive load of The Pre-Service Science Teachers'".

1.3.Research Purpose:

Determine the effectiveness of performance program for reducing cognitive load of pre-service science teachers.

1.4.Research Questions:

1. What are the features of performance supporting program that will help to reduce cognitive load of pre-service science teachers?
2. What is the effectiveness of using performance supporting program for reducing cognitive load of pre-service science teachers?

2. Literature review

2.1.1 Cognitive loading:

Regarding working memory, it proceeds Knowledge and skills and transfers them to long-term memory and Long-term memory stored it, However, work memory is limited in its ability and length, so the cognitive load cause losing the information if it doesn't connected to knowledge experienced that already store in log-term memory, and CLT takes an information processing approach to cognition, including working memory and long-term memory (cooper, 1998; Van Merrienboer and Ayres, 2005; paas and sweller, 2012).

In terms of principles, There are five principles about cognitive load, and it's connected to memory (Sweller, 2011; Sweller et al., 2011; Sweller, 2006) set up as following:

1. Long-term memory and the information store as human cognition consist of an enormous information store in long-term memory.
2. Schema theory and the borrowing and reorganizing as learn through borrowing schemas from other's long-term memories and These schemas are constructively reorganized through the lens of our own long-term memory.
3. Problem solving and the randomness as genesis principle. as the borrowing principle does not create new information except in so far as borrowing is inexact. If knowledge is unavailable, we must problem solve by randomly generating moves and testing their effectiveness.
4. Working memory and the narrow limits of change, as Working memory deal with numerus information and it could be less organized and randomness, and it caused a randomness of problem solving, and to reduce this issue, working memory is limited in both capacity and duration.
5. Long-term working memory and the environmental organizing and linking as limited of working memory and its transfer numerus amount of information, and organized information make this process easier and reduce the loading.

From previous principles we can conclude that teachers need to pay attention in learning process to the nature of long-term memory and its ability to store information, work memory and its limitations in processing new information, precisely, there are two options, either a new knowledge is transferred to the long-term memory by reorganizing this information, or new knowledge is lost because there is no

prior experience in long-term memory to support it, Which will be examined by the study, by recognizing the earlier experience of learners and then presenting the new knowledge that supports this experience, so that, it will be affordable for working memory in Transferring it to long-term memory and integrating into cognitive diagram, and new knowledge will be presented in a simple way so that it integrates with the learner's previous knowledge.

2.1.2. Types of cognitive load:

According to (Sweller, 2012; Sweller, Ayres and Kalyuga, 2011) There are three types of cognitive load, first of all, Intrinsic Cognitive Load, due to the difficulty of the content, whereas it is happened in terms of the numerous amounts of information elements and lack of interaction between them, the difficulty of the content itself, difficulty and complexity of the tasks to be accomplished, the abundance of information and its replication and lack of consistency among them, secondly, Extraneous cognitive load, It occurs as a result of the complexity of methods of presenting the educational material, such as poor design for the multimedia used, or its overuse, and the inappropriateness of instructional strategies, thirdly Germane cognitive load, which occurs because of the difficulty of the tasks associated with interpretation and self-application, and the Germane cognitive load considers the "good" cognitive load that needed to increase to generate meaningful learning, and without Thinking and reflection that reinforced by Germane cognitive load, Learning process becomes simply remember unrelated information.

And this study concern about reducing Intrinsic and Extraneous and how it could influence on Germane load.

2.1.3. Reducing cognitive load:

Intrinsic Cognitive Load can be reduced by eliminating some elements and relationships also, division and logical arrangement of scientific content, the external load may be reduced by good instructional design, the Germane cognitive load considers the "good" cognitive load that needed to incline to generate meaningful learning (Sweller, 2010).

In terms of delivering supportive program to students, there are several aspects of reducing cognitive load must be considered in delivering the program, and the six aspects are as following (Devolder et al., 2009; Mayer and Moreno, 2003):

Table 1: Aspects of reducing cognitive load (Devolder et al., 2009; Mayer and Moreno, 2003).

no	aspects	
1	Segmenting	present the information in bite-size segments with letting learners control the time lag between these segments
2	Individualizing	accommodate for different proportion of learner experience
3	Pre-training	offer the learner a sneak preview of the characteristics and terminology of different components
4	Weeding	eliminate interesting but extraneous material
5	Signalling	emphasize the most important aspects of the lesson
6	Aligning	present printed words close to the corresponding graphic material

Moreover, Paas and Sweller (2012) studied the effect of modelling and its fragmentation of attention and teamwork on the cognitive load on working memory, And the results demonstrated that better

learning occurs when audio-visual content is presented, In other words, the graph or picture is presented in conjunction with the presence of audio text associated with the picture, While there is written text, this is an extra load on visual memory, as well as not using a picture or diagram separate from the text, this leads to fragmentation of the attention of the learners, And when presenting steps for a given process, it is best to have static pictures because that's better than moving pictures. As for collaborative learning, it reduces the cognitive burden because the hard information that represents the internal cognitive load is split among the members of the group, This contributes to reducing the cognitive load on working memory and working in groups leads to the group members sharing their own cognitive schemas, so the cognitive schemes are borrowed from them.

Therefore, this study will use the following aspects to designing support performance program reduce cognitive load of preservice science teachers, and there are as following:

Segmenting, Individualizing, Pre-training, Weeding, Signalling, Aligning, and cooperative learning

2.1.4. Ways of measuring cognitive load:

There are many attempts to measure cognitive load, concluding in two directions of objective measurements to measure cognitive load, are: subjective and objective, and both have causal and direct measurements, as shown in the following table:

Table 2: Classification of Methods for Measuring Cognitive Load Based on Objectivity and Causal Relationship (Brunken, Plass and Leutner, 2003).

Objectivity	Causal Relationship	
	In-Direct	Direct
Subjective	Self-reported invested mental Effort	Self-reported stress level
	Physiological measures	Self-reported difficulty of materials
Objective	Learning outcome measures	Brain activity measures (e.g., fMRI)
		Dual-task performance

The table above shows the classifications of methods of measuring cognitive load, and this study will use the subjective direction to measure cognitive load for pre-service science teachers, cause this sample will be more realized the proportion of cognitive load their have.

2.1.5. performance Supporting program:

In terms of the aim of this study, which is reducing cognitive load to pre-service science teachers, we have to address features of supportive program in order to reduce the cognitive load.

Moreover Nguyen and Klein (2008) identified three types of performance support which are: External support far from educational content, learners must ask it such as search engines, frequently asked questions, and help, Performance supports electronic version (interface), which helps register in the environment, and how to navigate in it, which is far from the educational content, and its role is limited to electronic the system, internal performance support, which is additional content-related support tasks that are included in the main content, and it is designed to reduce load, and appears in parallel with content study.

Nguyen, Klein, and Sullivan (2005) claim that the three styles of supporting performance must be used, but in a different rates, which are the internal performance support style is 80%, the external

performance support is 10%, and the performance support within the system is 10%, But, Nguyen and Klein (2008) prove that the previous assumption were wrong, In other words, this study seeks to compare the three major performance support styles, the external, system and internal, Results showed that students obtained results when the environment was designed with the system and external type better than internal type, the study interprets the findings that performance support styles are characteristic of learners themselves, and it is not possible to make a firm design for all learners considering fixed ratios for each pattern, but these styles might differ depending on the characteristics of learners.

Additionally, There are several studies refer to the importance of designing e-learning components in light of reducing cognitive load, and consider cognitive load in their designing of e-learning content such as: (Chen, Woolcott, and Sweller, 2017; Ayres and pass, 2012; Liu et al., 2012) and they refer to the importance of designing e-learning components in light of reducing cognitive load.

Moreover Barker, van Schaik and Famakinwa (2007) Determine a set of principles that are: the use of specific and appropriate performance support sources for specific content, Whether these sources consist of texts or videos and pictures, providing immediate support to learners, steer clear of delaying support as much as possible., and When presenting procedures for any educational tasks, we must be shown step by step, learners' performance must be supported in content-related educational tasks, not just technical support, and the forms of performance support should be designed as pictures, videos or diagrams in a simple manner and easy to use. .

Further, Schaik, Pearson and Barker (2002) Address that three are main principles to do that which are: First, learners' performance should support first before providing support to them to determine the content which support should be provided, Secondly, there are differences in providing support, it may be when learner asks or without asking immediately or delaying it, Finally: providing support to a group or individually or participants may support each other.

Through the previous reviews, it became clear that there are a set of principles commonly mention in the literature and previous studies, which indicates their importance and essential, so this study will follow it, which are:

1- Determine learners 'performance before providing support.

2- Determine the forms of support provided (videos - pictures - charts) and design it in a simple and uncomplicated way

3- Determine the priority educational tasks in providing support.

4- Providing immediate support in educational situations that require this.

5- Providing individual or group support.

We can find some principles in cognitive load and supporting performance could integrated such as: Providing individual or group support integrate with Individualizing, and Determine the priority educational tasks cooperate with Signalling, and it is influence on reducing cognitive load.

In addition our support program content that extracted from ASTE (Association for Science Teacher Education) /NSTA (National Science Teacher Association), and AITSL (Australian institution standards for teachers and leader) \standards (Morrell et al., 2020), and fit it to Egyptian's context for pre-service science teachers contains the following standards that illustrate in table (2):

Table 2: modifying standard of ASTE (Association for Science Teacher Education) /NSTA (National Science Teacher Association), and AITSL (Australian institution standards for teachers and leader) \standards (Morrell et al., 2020).

Standard	Definition	indicators
Planning for an appropriate learning environment for all students	a set of procedures that start with formulating learning goals considering the content and selection of learning sources and classroom activities	understanding and organizing student teaching content, writing learning objectives, choosing learning resources, Plan classroom activities, define appropriate content instructional strategies, time management, and plan a variety of full lessons.
Designing and creating an effective learning environment for students	it focuses on developing social relations, responsibility, and support among students and include students in learning	organizing interaction, questioning, tying the learning process with life experiences and students' interests, implementing instructional strategies, and using Various technological aid to consider students' needs, direct student learning, modify teaching methods during the learning process, develop social relationships, and students 'responsibility, build a physically, intellectually and emotionally safe environment, and employ classroom rules and support positive behavior.
Evaluating students' learning	Including, exam scores, or informal, such as teacher's self-reflections	the application of various types of assessments and the involvement of students in the self-evaluation process and following their progress

Regarding this study we delivered the content considering the cognitive load and supporting principles and integrate between them.

3. Research Methodology

This research used a mixed-methods design, which is a procedure for collecting, analyzing, and "mixing" both quantitative and qualitative data during research to understand a research problem more completely (Creswell and Clark, 2007).

3.1 Participants: they were (16) of a pre-service science teacher who enrolled in educational diploma.

3.2 Research instruments:

cognitive load scale: describe the cognitive load aspects about teaching practices of pre-service science teachers, consist of 30 items expose the Intrinsic, Extraneous, and Germane load, and designed in lickert scale form from (1 to 5), 16 items measure the Intrinsic, and 6 Extraneous, and 8 for Germane, the following table illustrate the numbers of items in cognitive scale and which load it is indicate.

Table 3: aspects of cognitive load and its items indicate to it.

aspects	Items that measure each aspect	Numbers of item
Intrinsic cognitive load	1-4-6-8-10-12-13-14-15-16-17-18-21-22-24-25	16
Extraneous cognitive load	5-11-20-23-26-28	6
Germane cognitive load	2-3-7-9-19-27-29-30	8
	Total items of scale	30

The table above illustrate the numbers of scale items that indicate the cognitive load scope, and to more illustration, the table below shows examples of items in each aspect.

Table 4: **examples of items that measure the three aspects of cognitive load.**

no	Items	Totally agree	agree	sometimes	disagree	Totally disagree
1	To write learning objectives I need to think of multiple conditions that cause me to get distracted					
5	While identifying learning resources I felt a great need for important information.					
9	Determine an activity requires concentration and deep thinking of all the details of the content					

3.3 Reliability and validity of instruments:

We Examine the Reliability by Reviewing It to Specialists and Expertise in Curriculum and Instruction, There Are Some Modifications and Authors Do It Considering Research Purpose. Regarding Validity, We Use Cronbach's Alpha Equation; The Cognitive Load Scale Was (0.8) And This Amount Is Considering A High Validation.

3.4 Data collection procedures:

We Design the Instruments and Publish the Content of The Program and Start the Program with The Experimental Group For 12 Sessions. Each Session Lasted 1 Hour And A Half, Held Online Via Zooming Meeting Cloud, Further, We Arrange The Topics Of Content According To Topics That Need To Support, Which Are Subjected To Discussions, After The Sessions, Also, We Applied The Cognitive Load Scale To Determine The Differences Between The before conducting the supportive performance program and after it.

3.5 Data analysis:

We examine the study hypothesis by using (Mann-W Whitney-U) equation to identify the difference between pre-post-applied cognitive load scale.

Also, we conduct several of discussion to figure out the aspects that need to support and deliver an immediate supporting via platform and online meetings, further we found pre-service students need total support in Evaluating students' learning, Designing and creating an effective learning environment for students, and partially support in Planning for an appropriate learning environment for all students, and we deliver support according to continuity discussions, after each session.

Results of applying pre/post cognitive load scale:

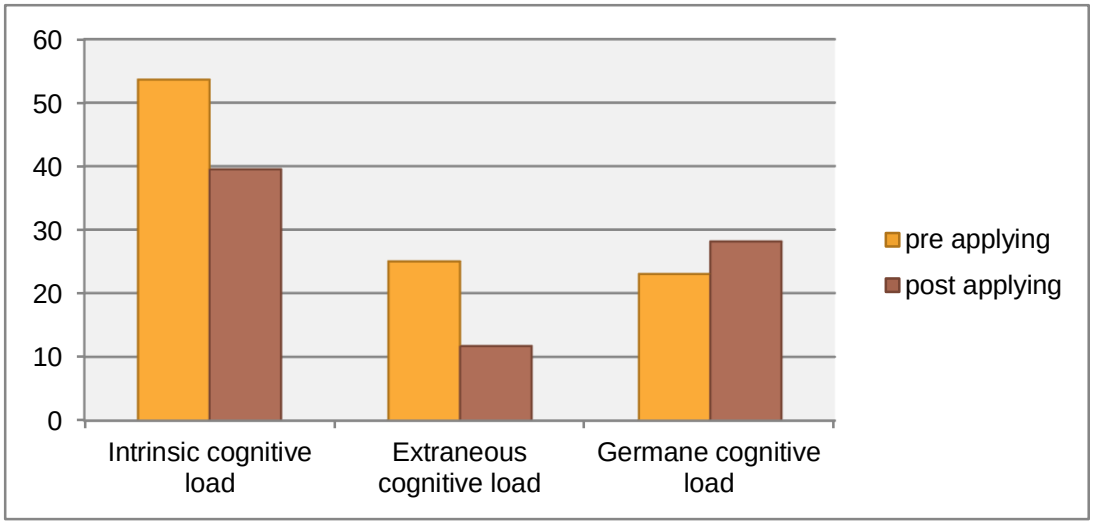
The table below illustrate the results of applying pre/post cognitive load scale on preservice science teachers.

Table 5: Results of Applying Pre/Post Cognitive Load Scale on Aspects of Cognitive Load

Cognitive load aspects	Experimental group	Total	mean	St-	Calculated z value	sig
Intrinsic	Pre	80	53.63	8.09	3.00	Sig on 0.01 level
	post	80	39.50	9.04		
Extraneous	Pre	30	25.00	4.84	3.46	Sig on 0.01 level
	post	30	11.69	2.84		
Germane	Pre	40	23.00	6.12	2.45	Sig on 0.01 level
	post	40	28.13	4.55		

The table above manifest that there is a significant difference between the pre and post applying cognitive load scale for the post applying in Intrinsic and Extraneous only and for the pre applying in Germane, and that indicates the germane load is beneficial to incline according to cognitive load theory, therefore it seem to be a positive indicator, also z value in the table bigger the calculated value.

Figure 1: illustrate the different between pre/post applying of cognitive load scale



Results expose the effectiveness of performance supporting program for reducing cognitive load of pre-service science teachers, further, it is illustrating the crucial role of concerning the memory model of human brains and how it effect on their learning and performing, and how we can integrate between the cognitive theory principles and supporting performance aspects, in fact we found it completes each other.

3.6 Discussions and interpretation:

The findings above existing due to the following reasons:

- consideration of the needs of students and supporting them before and during their learning.
- Using the principles of supporting the performance of student teachers, specifically: assessing the performance of learners before providing support to them.
- Designing the forms of support provided (videos - pictures - charts) in which contribute in reduce cognitive load, determining the priority educational tasks in providing support.
- providing immediate support in certain situations, and Educational support that entails providing individual or group support.
- using e- training environment is an environment based on an atmosphere of free speech and constant interaction among students, which led to the exchange of views and ideas among themselves and created an atmosphere that helped to think and yield diverse views and reduce the cognitive load.

3.7 Recommendations:

In terms of the earlier findings, the researcher recommends the following:

Considering the cognitive load when designing electronic courses to achieve effectiveness for students' performance, take in to account the principles of electronic performance support when designing electronic training environments, because it facilitates the learning process, concern about the principles of cognitive load theory in delivering content.

3.8 Conclusion:

in terms of data analysis, literature review, and findings, we conclude that deliver supporting performance program help to reduce cognitive load of pre-service science teachers to enhance and acquire teaching practices in teaching science, further, it is important to supporting performance in light of cognitive load to enhance the pre-service science teachers with low of cognitive load, so their performance will improve consequently.

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A Multidisciplinary Study of Data Science and IoT in SMEs through the 5th Wave Theory towards Global SMEs

Maryam Abolghasemi
Hamid Doostmohammadian

It is not an overstatement to argue that today, all small and medium-sized enterprises (SMEs) face the challenges imposed by big data and their analysis. Proper use of these data to attain insights and make the right decisions can contribute to the success of SMEs. Therefore, managers and experts must rely on certain methods of analysis that are based on past positive experiences and prioritize data and information based on their value. A glance at major companies reveal that those who have effectively implemented the use of commercial data and big data analytics have gained a competitive edge over other companies. Accordingly, this study embarks on an overview of the importance of data science in the success of SMEs, the role of big data analytics in SME management, and the methodology of management based on big data analytics. The world SMEs economy has changed from a SME business economy to a data and SME business economy, leading to the concept of the "Data Science in smart SMEs". Technology development creates new opportunities for SMEs improvement. Internet of Things (IoT), Internet of Business (IoB), Internet of Energy (IoE), Internet of Manufacturing (IoM), Internet of Health (IoH), cyber-physical systems, big-data, machine learning, Ubiquitous and Artificial Intelligence (AI) are new techniques used in the Industry 4.0 that enable SMEs to better management of resources and flexibility to respond to the business conditions for the 5th wave/tomorrow age theory readiness. The digital transformation driven by 4.0 technologies is having a disruptive impact on many business sectors. These innovations allow us to respond to both the growing SME business demand and the maintenance cost of SME businesses and a reduction in downtime. The multidisciplinary study of application of data science and IoT technologies to vast types of devices has led to electrical networks being monitored and controllable in a capillary way. Big data techniques and predictive models allow smart SMEs management, from a national scale up to

global, facilitating the spread of different SME business systems. New intermediaries and new business models appear in the market.

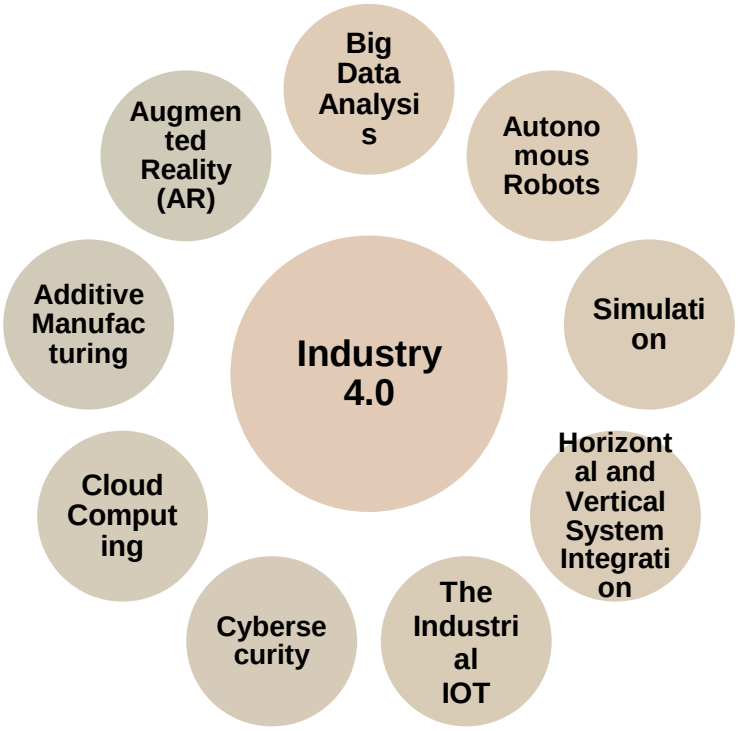
Keywords: big data, data science, analysis, data evaluation, AI, IoT, Industry 4.0, SME, the 5th wave theory

1. **Introduction**

Concepts such as the internet, digital technologies, information processing and robots emerged during the Third Industrial Revolution, also known as the Digital Revolution. Digital technologies helped designers and engineers as colleagues to produce new products with unique features.

Nowadays, we are amidst technological advancements and the dawn of the Fourth Industrial Revolution; which is founded on nine technological pillars:

- Big Data Analysis
- Autonomous Robots
- Simulation
- Horizontal and Vertical System Integration
- The Industrial Internet of Things
- Cybersecurity
- Cloud Computing
- Additive Manufacturing
- Augmented Reality



In the Fourth Industrial Revolution (Industry 4.0), sensors, machinery, products and computing systems will be interconnected to create a single supply chain in the form of a small and medium-sized enterprise. These interconnected systems can interact with each other or other Internet-based communications protocols, analyze data, predict failures, and adapt to changes. The Fourth Industrial Revolution makes data collection and analysis from machines faster, more flexible, and more efficient to produce quality products while reducing manufacturing costs. This change toward more efficient manufacturing will entail accelerated economic growth and change the competitive advantages of SMEs.

Although digital technologies are already implemented in manufacturing, the Fourth Industrial Revolution will transform it. In this generation, factories will experience better efficiency and changes to traditional manufacturing methods, relationship between suppliers and customers, and human-machine interaction.

1.1.Big Data Collection and Analysis in Industry 4.0

Nowadays, very few sensors and machines in factories are interconnected, and their output data is rarely analyzed. They are traditionally designed in an automation pyramid structure wherein sensors and control equipment use basic artificial intelligence to control manufacturing processes. In the Fourth Industrial Revolution, however, all devices are equipped with standard communications technologies using the concept of industrial IoT and undergo computer analysis. This allows the equipment installed in manufacturing processes to connect and interact with each other, and if necessary, the control unit.

At the same time, big data analysis has grown tremendously in recent years and is used for optimizing product quality, reducing energy consumption, and improving equipment performance. In the Fourth Industrial Revolution, big data collection and analysis from various resources, such as production line equipment, the ERP system, and even customer relationship management systems is standardized and used for decision making.

2. Smart SME Information and Data

As discussed earlier, smart SMEs is a phenomenon in which things, individuals, processes and devices interconnect through Internet-connected infrastructure to produce a massive amount of information, including sensors, databases, media, and others. The emergence of communications technologies is followed by the development of other information sources, including cloud computing, IoT, and crowdsourcing. Figure 1 summarizes the information resources in smart SMEs (Ben Sta, 2017).

Crowdsourcing is a type of outsourcing to a group of unknown individuals instead of specific companies or organizations. They are unknown in the sense that a company cannot source an ideal collection of individuals. These groups include skilled as well as inexperienced people. Many knowledge management and outsourcing fields are currently developing crowdsourcing in an effort to attract new ideas to the innovation processes of many enterprises. This idea was proposed by Howe (2006).

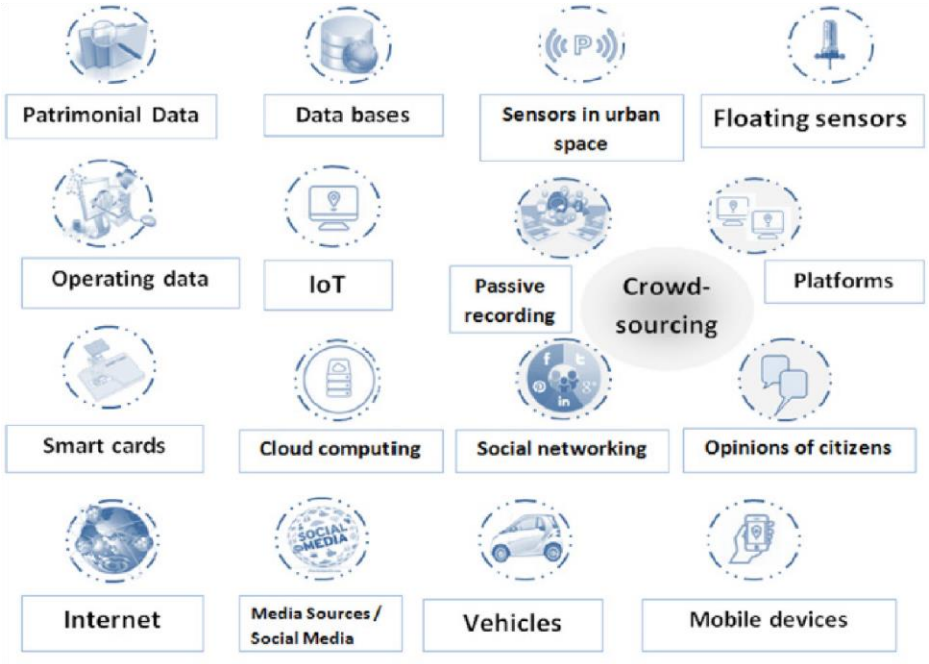


Figure 1. Information Sources in Smart Small and Medium-Sized Enterprises (Smart SMEs)

3. Big Data Processing in Smart SMEs

The term "Big Data" describes growth, multiplication, heterogeneity, complexity, access, scheduling, variability, and using data in various practical domains. These features exclude standard applications and the traditional database infrastructure due to the lack of computational and analytical capabilities required for big data processing.

Traditional analytical systems are ill-suited for big data management. This means that big data management entails the use of tools (classification, clustering, regression and other algorithms), techniques (data mining, machine learning, statistical analysis, and others), and technologies (Hadoop, Spark, HBase, MongoDB), which exceed the limitations of the analytical methods used for extracting useful knowledge from a huge amount of data for precise and fast decision making and additional intuition. There is no centralized or certain definition of big data in stable smart SMEs. This term can be used to describe a great deal of organizational information which require substantial analytical and logistical coordination and computation for modification, analysis, management, and correlation. It's worth mentioning that such information receives the time and location tags that are automatically generated by various sensors. Despite the disagreement in defining big data, there appears to be consensus that big data will lead to huge advancements, innovations, and many amazing features and opportunities.

The main features of big data are the massive amount of data, a speed at which it can be processed, and a wide variety of data types.

The phrase "Big Data Processing" generally refers to any large amount of data that is potentially used for collection, storage, recovery, integration, selection, preprocessing, conversion, analysis and interpretation for discovering new and useful knowledge. The other computational mechanisms that are used in big data processing are searching, sharing, transferring, querying, updating, modeling and simulating.

Big data analysis in smart SMEs refers to a set of complex and proprietary software applications and database systems that are run using computationally-powerful machines that can convert big data to useful knowledge for deliberate decision-making by managers.

Traditional types of big data processing include analytical, predictive, diagnostic, descriptive and experimental types, which are used for extracting various types of knowledge and intuition from big datasets for different purposes according to their practical fields (Bibri, 2018).

In the scientific literature, Chen et al. (2010) presented a systematic analysis of data mining in technical, scientific and applied perspectives, which was backed by the latest developments in smart enterprises. Zhang et al. (2016) presented new research opportunities and offered intuitions into selecting suitable processing systems for specific applications. In fact, a high-level model of classified parallel processing systems includes stream processing, machine processing, graph processing, and batch processing. Singh

and Singla (2015) reviewed the leading big data storage and processing tools and technologies, and covered new information generation technologies and businesses that generate big data. Tsai et al. (2015) evaluated big data analysis and its relevant issues with a focus on utilizing a high-performance data processing platform to analyze data and present the suitable data mining algorithm for extracting useful knowledge from big data.

4. Evaluating Big Data in SMEs Using Information Science

Among our key findings is that high-level executive organizations use analytics five times less than SMEs. In general, our evaluation uncovered a commonly-held belief that analytics is a valuable science. Half of our respondents stated that improving information and analytics was their utmost organizational priority.

Over 100 executives, managers and analysts from various SMEs were interviewed to achieve more accurate results.

Over 60% of respondents mentioned competitive advantage as an important business challenge. Likewise, a similar percentage of individuals agreed that their organization has big data on what they could effectively use. Organizational leaders want to use analytics to take advantage of their growing big data and computational power for becoming smart and innovating in methods that they previously lacked.

At present, senior executives want to align businesses with big data decisions, find optimal solutions according to complex business parameters or new information, and to act swiftly.

These expectations can be met, but with cautious prediction. To use analytical knowledge, these actions should be closely related to organizational strategies, easy to understand by end users, and embedded within organization processes to take action in the appropriate time.

4.1.Analytics

This study clarifies the relationship between the performance and competitive value of analytics. We asked respondents about approximating the competitive position of SMEs. Those who “performed significantly better than industrial counterparts” were identified as senior executives, whereas those who “performed somewhat or significantly worse than their industrial counterparts” were considered low-performance executives.

4.2.Levels of Analytics

Organizations with knowledge of their position regarding their embrace of analytics were better prepared to turn challenges into opportunities. We categorized respondents according to their own ratings of their organizational progress in analytics, especially how they changed their organizations by better using analytics and information. There were three levels of analytical capability with clear advantages, including aspirational, experienced, and transformed capabilities [2].

Aspirational Capabilities: These organizations are the furthest away from their desired analytical goal. Most of these organizations focus on automating existing processes and looking for cost-mitigation methods, and currently possess few of the necessary components including people, processes, and supporting tools to collect, understand and integrate analytical intuitions or act upon them.

Experienced: These organizations often gained analytical experience through success with efficacy in the aspirational phase and were after a greater goal than cost management. Experienced organizations are developing better methods for collection, integration, and action regarding analytics in an effective method and can therefore start optimizing their organizations.

Transformed: These organizations have used analytics in a wide variety of tasks and have gained basic experience. These organizations use analytics as a distinguishing competitive advantage and are skilled in organizing people, processes, and tools for optimization and distinction. Transformed organizations focus less on cost reduction than aspirational and experienced companies and probably automatize their operations through effective use of intuitions. They often focus on customer-oriented profitability and targeted investment in analytics since it maintains organizational coverage with pressure.

5. The Role of Big Data and Information in Organizations

Transformed organizations state three times as much as aspirational organizations that their operation is fundamentally superior to their industrial counterparts. This advantages explains the effectiveness of a series of potential bonuses from a higher-level embrace of analytics.

5.1.In Fact, the Biggest Obstacle is Not Data

Contrary to conventional wisdom, big data is not a great challenge that organizations face during adoption of analytics. Only one in five respondents named concerns regarding big data quality or insufficient supervision as preliminary obstacles.

The adoption obstacles that organizations face are often management and cultural and are unrelated to data technologies. Four in ten respondents stated that the main obstacle to encouraging adoption of analytics is the lack of understanding regarding its use for improving the business. Over one in three respondents mentioned the lack of management bandwidth due to competitive priorities.

Executives demand better methods to correlate complex intuitions and quickly absorb the data sense and take action. Over the next two years, executives claim that they will focus on complementing standard historical reporting with emerging approaches to bring information to life. These include data visualization, process simulation, and text and audio analytics, social media analysis, and other predictive and prescriptive techniques.

New tools like these can simplify the understanding of intuitions and act at any point and level of skill in the organization. They can convert numbers into easily-usable information and intuitions while relying more on interpretation or leaving them out due to ambiguity in action (Figure 1)[3].

Figure 1. Big Data Analysis in Organizations and Using the Analytical Results Obtained

5.2.Management Methodology According to Analytics

Taking advantage of analytics begins with adopting large projects and continues with unique actions. However, it also requires certain very specific management approaches. According to the big data obtained from research, management experience, case studies and interviews with experts, we have discovered a new five-point methodology for successful analytics-based management and rapid value creation. The following recommendations are designed to assist SMEs to understand the new path to value. While each recommendations offers a series of different pieces of information and the puzzle of analysis' value, each meets all three requirements of critical management:

Faster Valuation: During the preliminary stages of organizational progress, analytical complexity can lead to value creation. As opposed to traditional assumptions, value creation requires complete big data with full-scale organizational transformation.

Focusing on Feasible Steps: The approach adopted by shrewd SMEs is somewhat powerful, since it empowers leaders to focus on efforts and resources instead of global changes at every step - simplifying each step with an appealing ROI.

5.3.Value Creation with the Company's Analysis Department

SMEs that initially experience the value of analytics in separate business units or performances are more likely to look for a wide range of capabilities and more advanced use of existing capabilities. The centralized analytic unit, previously called the center of advantage or competency, replaces distributed and centralized capabilities instead of adding a central unit to create the existing capabilities, which could be developed beforehand in tasks, units and business lines (Figure 2)[3].

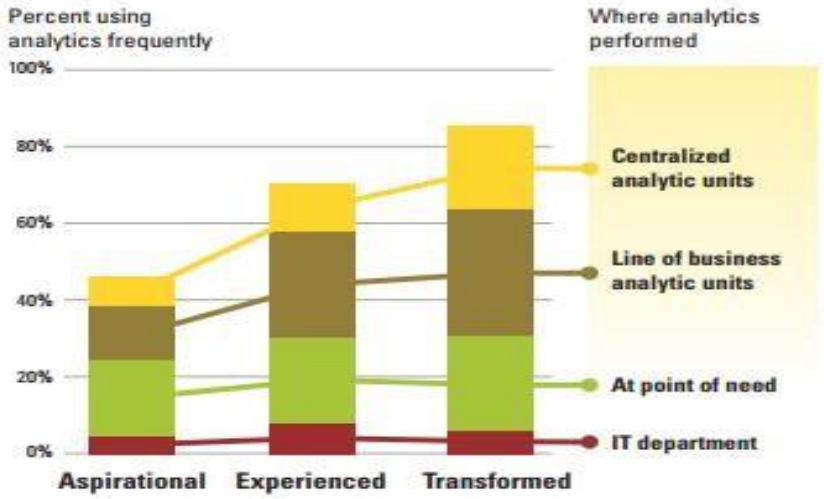


Figure 2. Comparing Transformed and Aspirational Organizations According to Big Data Analysis and Evaluation

We noticed that transformed SMEs use the centralized company unit as the preliminary source of analytics 63% more often than aspirational SMEs. The central analysis department can provide a place to gather advanced skills inside the organizations and create top governance and advanced models by realizing priorities and standards accordingly:

- Standard advanced methods for identifying business problems to be solved using analytics.
- Facilitating the identification of the business' analytical needs while being carefully guided in methods of intuition adoption within continuous and consecutive processes.

- Improved company-level supervision of prioritization, universal data sources, and reuse for achieving efficiency.
- Standardizing analytical tools and platforms for facilitating resource sharing, simplification and effectiveness in repair and maintenance, and reducing licensing costs.

In three separate areas, namely using the analytical tool, practical use of analytics, and skill locations, we discovered that adding capabilities without weakening the existing ones provides a quick path along with the complete advantages of analytical management.

6. Conclusion

Big data is obtained as a result of big transactions. In SMEs, information is obtained from documented and interconnected supply chains that transfer instant data in various working areas. Furthermore, new practical areas in information and communications technologies, such as IoT and cloud computing also produce big data. Considering the topics discussed, the greatest challenges of SMEs for success should be identified correctly, which can be investigated through analytics to select the more valuable data from big data that contribute to organizational success. Each of these recommendations can meet the three requirements of critical management in dealing with big data:

- Saving time for evaluating the existing information in big data.
- Making the least changes to the big data structure during data and information management.

Focusing on feasible goals in the next stages and remembering the value of the previous big data (careful protection of the information chain in big data)

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THE MEANING OF OBJECTIVE GOOD FAITH IN THE TRANSLEX PRINCIPLES

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Abstract

Despite its numerous enunciations, the meaning of objective good faith remains obscure. Objective good faith, as presented in the Translex Principles does not escape from this problem. This theoretical reflection attempts to provide for such a meaning in this particular codification. This will be done by, paying attention to the transaction costs that potentially arise in context of wide information asymmetries, at which point, it is the objective of institutions to reduce said asymmetry. In international commercial transactions, opportunistic behavior is ripe -which from the standpoint of legal studies is equated to bad faith. In this sense, objective good faith is identified with a general legal institution, the aim of which is precisely to limit opportunistic behavior. From it more specialized legal institutions are born, its concretization being possible partly possible by the practice of international arbitration, contributing thusly to transnational law.

Keywords: *objective good faith; opportunism; international arbitration.*

The enunciation of objective good faith in different sources

To the question of what are the principles and rules composing what has come to be known as the New Law Merchant the TRANSLEX creeping codification (henceforth, the Principles) attempt to provide an answer. Among the more than 130 principles and rules of transnational commercial law that it gathers and presents with the corresponding explanations, objective good faith is one of such principles.

The rule, which the parties cannot exclude from or limit its application to their relationship, states that parties to an international contract must act in accordance with good faith and fair dealing, and such imperative is expected to be observed during the negotiation, formation, performance, and interpretation of the contract. This kind of good faith, which is to be differentiated from the justifiable ignorance that is subjective good faith, can be summarized as not taking advantage of a contractual position in situations that might lend itself to it. As a key concept, it is argued that it is a principle capable of creating, modifying and extinguishing legal relationships. It allows the judge, in some cases, to deviate from the wording of the contract or applicable contract law. Indeed, where the judge finds that the application of either of these would result in opportunistic behavior or inefficient risk allocation, he can deviate from any of them by using the good faith principle.

In spite of its importance, the meaning of objective good faith as enunciated in the Principles is far from agreed upon. The question also applies to its nature. Is good faith a rule, or a principle?(Mackaay, 2011, p. 8) At this point, it is worth mentioning that most attempts to clarify such meaning are simply unsuccessful. Most of them appear to translate what could be a general term into other general terms -such as fairness. As an apparent principle, objective good faith appears to be capable to justify any rule of contract law. Such could be the case of §242BGB, according to which an obligor has a duty to perform according to the requirements of good faith, and which, as a general provision, suffuses all the law of the contract. Furthermore, having no objective meaning could lead to the conclusion that it is a kind of general mold, in which more specific doctrines can be cast, then to assume an independent existence within the positive law of different legal systems. This last one could be the case of the concept of *culpa in contrahendo* in German law.

The implications of an ambiguous definition of objective good faith in the TRANSLEX Principles

For now, it should suffice to mention that objective good faith is heavily based on the asymmetrically distributed information among contract parties at contract formation, its negotiation, performance, and general interpretation. In short, with the honesty the parties exercise toward each other. A lack of a clear meaning of the concept runs the risk of rendering the notion of objective good faith not operational.

Objective good faith as a negative concept

Keeping up the search for meaning, one interesting position is to see good faith as a sort of cradle rule, from which judges create rules in order to supplement, limit and qualify specific legal rules and contract terms (Summers, 1968, p. 198). If it is admitted for the sake of argument, that judges do in fact have a clear or unclear duty to create legal rules, by invoking good faith, it may be possible for the judge to do justice in a contract relationship, in which one of the parties has taken unduly advantage of the other one in a situation that has lend itself to it – either because observance of the black letter of the contract leads to such a situation, or the applicable mandatory or default rules of contract law do so. Without such a resource, justice might be achieved by the judge, as the case analyst, but probably at the cost of raising uncertainty for future legal cases, as the rule would not derive from any visible principle (Summers, 1968, p. 198).

Notwithstanding, when the judge is trying to impose a specific duty of good faith to the contract parties, it may be instantly obvious what he means, but usually this is not the case. Either if the judge is using the terms loosely or with care, there may be still some lack of clarity surrounding the expression “acting in good faith.”

In order to unveil such meaning, a first important step would be to observe the primary function of the judge. In short, judges rule out behavior. In this sense, it can be argued that the purpose of unveiling the meaning of good faith is better served by asking what is it that the judge is interested in ruling out in the real or hypothetical situation, whenever he is invoking good faith. What the judge is seeking to rule out are sets of bad faith behaviors. Once the relevant form of bad faith is identified, we could assign a specific meaning to good faith, first by formulating an opposite enunciate for the species of bad faith being ruled out. For example, a judge may say that the seller must act in good faith when transferring the property title to the buyer. From the language of the case, or its facts, it could be the case that the judge is actually saying: that the defendant acted in bad faith because he did not disclose in time critical pieces of information that would support the purchase decision by the buyer. It could be said, that, in this particular

case, acting in good faith means: complying with a general duty to inform the counterparty in a purchase contract (Summers, 1968, p. 201).

It would follow that, in contract law, good faith is better understood as an EXCLUDER, a phrase without general meaning of its own, serving to exclude a wide range of distinct forms of bad faith behavior. In a particular context, the phrase takes on specific meaning, but really only by way of contrast with the specific bad faith actually or hypothetically being ruled out (Summers, 1968, p. 201).

This particular excluder approach, it turns out, is reflected to a considerable degree in the enunciation presented by the Principles in rule No. I.1.1. Parties to an international business transaction must act in good faith. By implication, the principles should be interpreted in a way that each party has the obligation to display a behavior toward the other one which cannot harm it, having this one formed reasonable expectations regarding the performance of that one. Furthermore, the parties have to display a normal degree of honesty and sincerity, which is reasonable for the safeguard of the party's interests, particularly in trying not to act in a way that potentially is to unduly surprise or inflict damages to the other party.

The rule also mentions that the standards and requirement imposed on the parties by the principles of good faith vary depending on the individual circumstance involved, such as the trade sector in which the parties are operating, and the nature and duration of the contract. This implies that the application of the good faith principle is never a purely mechanical process, but one that always requires a determination of what is deemed to be a proper conduct of a party, taking a case-by-case approach.

Law & economics approach to objective good faith

While useful, the approach consisting in understanding objective good faith as an excluder still begs the question of operational meaning for bad faith. Let us say from the beginning that the intention of this discussion is to present bad faith as being equal to opportunism.

In order to do just that, it is essential to gain a better insight into the notion of EXPECTATION INTEREST. It is traditionally a concept viewed as comprising property, services or money to be received by the promisee. On the other hand, it also encompasses the costs of performance by the promisor. These expected costs are composed of forgone opportunities upon entering a particular contract (Burton, 2017, p. 372). Paying attention primarily to these costs of performance by the promisor is essential to understanding good faith.

Bad faith performance occurs precisely when discretion is used to recapture opportunities forgone upon contracting –as when the party exercising discretion refuses to pay the expected costs of performance. In turn, good faith performance occurs when the discretion conferred onto the party is used within the reasonable contemplation of the parties at the moment of the contract formation. In other words, acting in good faith is equivalent to capturing opportunities that were preserved upon entering the contract. The good faith doctrine therefore directs attention to the opportunities forgone by a discretion-exercising party at contract formation, and to that party's reasons for exercising discretion during performance. It is because of this reason that bad faith is equated to opportunism (Burton, 2017, p. 373). Objective bad faith performance is only capable of modifying, creating, or supplementing a contract obligation if it is considered a breach of contract. It would only be such, if in important aspects it resembles a breach by failing to perform as expressly stipulated in the contract.

In order to identify if we face a breach of contract by performing in bad faith we must pay attention to the eventual fact that the promisor used his discretion, in compliance with the wording of the party, to recapture said forgone opportunities.(Burton, 2017, p. 378) Independently of how this discretion is conferred upon, the dependent party must rely on the good faith of the controlling party. Only in such cases, the judge can expressly invoke the implied covenant of good faith and fair dealing, or interpret a contract in light of good faith performance (Burton, 2017, p. 380).

Deferred decision as to time of performance, for instance, may allow one party to determine when it shall perform, when the other party shall perform, or when the contract shall end. Often such decisions are expected to be executed in good faith. When such deferred decisions are made, the dependent party then is left to the good faith of the party in control.

In turn, bad faith consists in an exercise of discretion in performance to recapture forgone opportunities at the moment in which the contract is formed. The expectations of the dependent party encompass both the subject matter to be received under a contract, and the expected costs of performance by the other party. A recapture by one party of forgone opportunities necessarily harms the other one. A reasonable person accordingly would enter a contract that confers discretion to the other party only on the belief that such discretion will not be used to recapture forgone opportunities.(Burton, 2017, p. 387)

In contract law, bad faith can be equated to opportunism, and good faith to abstaining from opportunistic behavior (Muris, 1980, p. 566). Key here is to focus on the involuntary transfer of wealth that occurs when the controlling party, exercising discretion, behaves contrary to the dependent party's understanding of the contract, but not necessarily contrary to the explicit terms of the agreement (Muris, 1980, p. 522). Because such an involuntary transfer of wealth, parties to a contract experience incentive to avoid becoming victims of opportunism. Yet, whatever strategy they choose, deterrence will come at a cost. Many legal doctrines appear to be cost-effective means of deterring opportunism, in comparison with self-protection by the potential victims. Good faith can be understood as one of such doctrines (Mackaay, 2012).

In the law & economics literature, there are a number of particular forms of opportunism such as: free riding, shirking, agency problems, moral hazard, etc. Institutionalism places opportunism in an important, central role. Williamson defines it as self-interest seeking with guile. A concept opposed to trust, and associated with selective or partial disclosure of information, with uncertainty, with bounded rationality; and with self-disbelieved promises about the opportunist's own future conduct (Williamson, 1985, pp. 47, 64–67). It is an effort to realize individual gains through a lack of candor or honesty in transactions, being the most common form the strategic disclosure of asymmetrically distributed information by individuals to their advantage (Williamson, 1973, p. 317).

The reason good faith is to be observed during all stages of an international contract, according to the Principles, is because opportunism potentially affects all of them, and hence, it is one particular phenomenon with which contract law should concern itself (Cohen, 1992, p. 957).

If opportunistic behavior is left unchecked, it would lead to all potential contractors to raise their guards, taking more extensive measure against "being had" by opportunistic behavior. The ultimate precaution would be forgoing the contract altogether –probably the costliest option. If such choice is adopted by many contractors at an international level, this would shrink the market. Precautionary measures short from abstaining from contracting are wasteful relative to social welfare. Guarding oneself against opportunism

is first a responsibility of the contracting parties. The legal system can, however, make itself useful where its presence allows parties to reduce their self-protection and loss-absorption costs -and where this can be accomplished at a cost of the rule itself; and its enforcement that is lower than the savings so generated. One may expect such gains where public authorities have access to greater scale economies in framing and enforcing rules that are open to private actors.

Good faith as anti-opportunism in contract law

On account that there are always innovative forms to behave opportunistically, contract law needs an open-ended set of responses to it. Over time, legal systems have developed a variety of specific concepts to deal with particular forms of opportunism. Consider the case of fraud (or *dolus*), defined as any trick to deceive a person. In this sense, consider one of the UNIDROIT Principles, according to which **a party may avoid the contract when it has been led to conclude it by the other party's fraudulent representation**, including language or practices, or fraudulent non-disclosure of circumstances which, according to reasonable commercial standards of fair dealing, the latter party **should have disclosed.** Reference is being made here to the basic idea of opportunism. In it, the party has the right to step aside from the contract, which he would never have enter it, had he not been deceived by erroneous or incomplete information provided by the other party.

The example of fraud makes sense if its point is to deter opportunistic behavior by selective disclosure of information by one of the parties. Accepting opportunism as the theoretical focus behind something like fraud, for instance, directs attention to new factual patterns that might be relevant to curtail opportunism, as other actions of other individuals can be identified as related to such patterns. By doing this, as new cases are presented to courts and to codifiers –probably consolidating the courts' efforts- these broadens the existing formula to cover closely related forms of opportunism.

Gaps are then filled at the margin of existing concepts, and the result thereof are legal institutions, new rules that can be identified as ANCHORS to good faith –composing what has come to be known as the inner system of rules and duties within the good faith concept. These serve the purpose of keeping legal uncertainty within acceptable boundaries, contributing to broad legal objective of curtailing opportunism,(Mackaay, 2012) while providing for important limitations for discretionary decision making by the judiciary. We have then that institutions such as fraud or *culpa in contrahendo* are important elements of such inner system.

Yet occasions may arise where the opportunistic behavior being faced is not covered by the inner system as developed so far in positive law. For such occasions, it becomes useful to count on an open-ended concept, capable of being applied, as a last resort to such novel forms of opportunism. The duty of good faith plays precisely this residual role (Mackaay, 2012). The duty to act in good faith is applied as a rule of last resort in exceptional cases, in the expectation that this will lead in due course to the crystallization of a new concept, a new ANCHOR applicable to a specific set of problems, as has happened with *culpa in contrahendo* in German law. This anchoring process may be operated by the courts under the general cover of good faith. It may also be undertaken by legislation. Lastly, at an international level, it may also be undertaken by soft law restatement efforts such as the one concretized in the Principles, resulting from the systematization efforts by legal scholars identifying different groups of cases where there is opportunistic behavior and the different functions that the inner system of good faith would provide.

The duty to perform in good faith as an anti-opportunism means in the TRANSLEX Principles

The good faith provision in the Principles does not contain a rule, in the same sense as Civil Codes usually do. It presents no facts to which it applies, nor any legal effect, and these ones cannot be established *a priori*. Hence no subsumption can be made with it. Notwithstanding, it is in fact a norm, an open norm. Its content cannot be established in an abstract manner, but with the attention placed on the circumstances of the cases analyzed, and through concretization (Hesselink, 2004). Being an open norm, what really matters is the way in which good faith is applied by case analysts, such as international arbitrators: its character is best shown by the way in which it operates.

We could argue, based on this, that, on the one hand, good faith historically has been of mouthpiece through which new legal rules are created, which would be illustrated by the example of *culpa in contrahendo*. Regarding the applications that judges make of good faith, it has been argued that, judges in Continental Europe –and any other civil law country- have felt traditionally uncomfortable with their role as creators of legal rules, and not merely applicators of the law. However, when they do produce decisions based on good faith, this general clause is used as a cover for such new creations. Judges, in this sense, do create new rules, in spite they being uneasy with it. If there is such doubt regarding the function of judges as rule creators, good faith would have a place as a formula empowering judges and arbitrators to create new rules. And in this sense, good faith is a kind of cover for the judges for the creation of new rules – when it is so demanded from them (Hesselink, 2004).

It could be argued that the situation in international trade is precisely one in which, in some cases, international arbitrators are expected to contribute to the rule of law by creating a rule that supplements, for instance, the will of the parties expressed initially in the contract. Not only that judges create rules, but also that international arbitrators are capable of creating rules is, of course, a controversial subject. Furthermore, it could be argued that good faith, at a national law level, grants the judiciary a wide and potentially dangerous discretionary decision making power which could result in the importation of ideology into contract law; promoting private opinions of the judge. Furthermore, by creating rules, the risk of judicial activism becomes considerable. If this is a concern related to national judiciary, imagine the degree of the same concern regarding international arbitration, with its alleged lack of checks for utility maximizing behavior by favoring the party with the deepest pockets. However controversial this issue might be, in the international trade context, it is usually argued that arbitrators do create rules; they do contribute to the international rule of law, to put it in other words. Furthermore, the fact that the duty to perform in good faith is included as a norm with such a degree of openness in the Principles should be evidence enough of the potential for opportunistic behavior in international contracts. The wording of the principle must be open-ended enough so international appointed arbitrators can meet the demand of newly created rules –potentially becoming anchors in the future- that curtail opportunism at an international level. In fact, one differentiating feature of the Principles is its heavy reliance of international arbitration case law that is expected to add to the creeping list of the New Law Merchant that it attempts to constantly codify. Such is the meaning of good faith, which calls constantly for concretization by arbitrators adjudicating cases with international elements, relying on the TRANSLEX principles.

In the particular case of the Principles, an interesting example comes from Principle No. I.2.1, relating to the *standard of reasonableness* (Trans-Lex, 2020). According to the wording of the legal provision, the parties always have to act according to what is reasonable in view of the particular nature of their transaction and the circumstances involved, in particular the economic interests and expectations of the parties. Clearly, the provision is making an indirect reference to those situations in which, opportunism can be present, whenever discretion is being exercised in order to recapture forgone opportunities, against

the legitimately formed expectations of one of the parties. The provision, in this sense, is based on the general, open clause of objective good faith as enunciated in Rule No. I.1.1 of the Principles.

Evidence of the logical deduction linking both norms is presented by an international commercial arbitration decision. In the context of a contract of land and sea transportation between an English enterprise and a French transportation company, the latter affirmed a raise in the price, because the transported pieces were more than the ones originally intended, and more voluminous. The English enterprise denied such petition. It argued that, indeed, the parties had agreed on eventual price adjustments, but only to those related to changes in sea freight tariffs. The arbitrator produced the award in favor of the French transportation company. It argued, that the conventions have to be interpreted in good faith, meaning by this, in the particular case, that each party has an obligation to display a behavior toward the other party which is not supposed to harm the other one. This implies that renegotiations are usual in international economic affairs in case of abrupt changes in conditions leading to disequilibrium. Behaving unreasonably in this case would have been tantamount to behaving in bad faith, inasmuch as a strict application of the contract terms –which would initially block the renegotiation of the price based on the French claims- would unjustifiably harm one of the parties (ICC, 1975, p. 990).

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Increasing Information Communication Technology Diffusion For Elevating Asian Economic Growth

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Abstract

This study assesses whether strengthening information and communication technology (ICT) will drive economic growth at different income levels in Asia. The main question is whether the benefits of ICT development vary from different income levels. The observation samples in this study used 25 countries in Asia between 2000 and 2018 period. The empirical evidence present in this study is based on the FMOLS estimation test followed by the Dumitrescu Hurlin Causality test with the robustness CCEMG estimation test of various ICT indicators to investigate the long-term effects of explanatory variables on economic growth. The results show that the linkage between communication technology and economic growth, which is measured as the penetration of internet users, is highly significant in the developed countries of Asia. In contrast, increasing ICT measurements of telephone line and mobile phone penetration are crucial in Asian developing countries in driving economic growth. The policy and decision-makers should take into account policies related to ICT enhancement, which considering the development of ICT's impact on the economy and society by evaluating the management and regulation of ICT infrastructure. The contribution value of this study presents the robustness result findings by employing sophisticated econometric methodologies for the different ICT indicators. Moreover, this study presents an empirical measurement and relationship between the explanatory variables and the dependent variable while also explaining numerous government policy initiatives taken to promote economic growth by adopting the technology.

Keywords: *ICT; economic growth; Asia; panel data; communication technologies, developed countries; developing countries.*

A multidisciplinary study of stress management models and giving a 7PS stress management model for SMEs through the 5th wave and i-Sustainability Plus theories

(Case: German patterns and solutions for Iranian SMEs' challenges/Behsotun Intelligent Medical Complex)

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Abstract

The term "stress", as it is currently used was coined by Hans Selye in 1936, who defined it as "General Adaptation Response, the non-specific response of the body to any demand for change". We live in an age called the age of change, everything is changing rapidly and adapting to these rapid changes is not happening as fast. Changes in living conditions begin at birth, and humans are very strong in their physiological adaptation get used to these changes quickly. After the baby passes through the birth canal, which is undoubtedly the most difficult stress that a creature can withstand. The human baby enters a very different world in terms of environmental conditions, and this is just the beginning. What our genes predicted to adapt to environmental change, with what is happening in an age of rapid change, not very consistent. In other words, *"we are fighting new problems with old weapons*". In our paper we aim a multidisciplinary study of stress management models, combination of management, economy, social & medical knowledges and giving an appropriate innovative global cultural smart sustainable stress measurement/management model based on 7PS model for SMEs through the 5th wave and i-Sustainability Plus theories which is made of the trinity open innovation, sustainability and digital technologies with using German patterns and solutions for Iranian SMEs' challenges especially in Behsotun Intelligent Medical Complex.

As SMEs are formed more than 95% of businesses all around the World, they play indispensable role within developing economy sustainability as well as 7PS model sustainability. SMEs are introduced as economic backbone of each country through improving inclusive and sustainable economic growth, providing employment and work for all, enhancing sustainable industrialization; even as tool to achieve sustainable development. Workplace Stress Statistics in US show 83% of workers suffer from work-related stress and businesses lose up to $300 billion yearly as a result of workplace stress, work-related stress causes 120,000 deaths and results in $190 billion in healthcare costs yearly and stress management has become an undeniable necessity. Measuring stress levels in individual is a basic need for stress management, especially in small and medium enterprises (SMEs). As Peter Drucker says, something that cannot be measured cannot be managed, ***"If you can't measure it, you can't improve it."*** In the last two decades, most scientists have focused on measuring stress hormones such as cortisol, pituitary and adrenal axis. (*Chatterton ,Vogelsong ,Ellman & Hudgens 1996).* Also the effect of

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Keywords:
Stress management, Stress measurement, Biochemical changes, Hormonal changes, Risk factors, SME in Iran & Germany, New measurement model, Cultural dimension, 5th wave theory, i-Sustainability Plus Theory, 7PS mode, Global Burden of Disease (GBD), Disability-adjusted life year (DALY), Quality-Adjusted Life Year (QALY), Health prediction, Changing the Life style.

John Locke's Educational Philosophy for Young Gentlemen's Reading

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Abstract

Some Thoughts Concerning Education (1689) by John Locke (1632-1704) is one of the most significant educational works of the 18th century. This book has greatly influenced subsequent writers. Locke's empiricism philosophy on education has fundamentally influenced Jean-Jacques Rousseau's writing of Emile and even the children's education in the 18th century of Britain. While the influence of Locke's educational philosophy is enormous, there has been little research on Locke's insights on gentlemen's reading and children's education. The most important researchers on children's literature in the eighteenth century in England like Johnson (1850), Darton (1982), Sloane (1955), and Summerfield (1984), only lightly mentioned Locke and his ideas in their works. The importance of Locke's Some Thoughts Concerning Education has never been fully explored..By closely reading Locke's Some Thoughts Concerning Education, this article puts Locke's educational thoughts in the historical context and compares him with his antecedent and contemporary authors. The article discusses how Locke's educational philosophy on gentlemen's reading is reflected in the classical literary works of the 18th century. First of all, Locke proposes to attract young readers into learning by games as opposed to learning by rote memorization. He respects the curious, playful nature of young gentlemen, which launched the discovery of the identity and notion of "children" in the 18th century..The second part of the article focuses

on Locke's suggestions on selecting reading materials for children based on the pragmatism philosophy. In Locke's criticism, the most popular reading materials for children at that time, namely, fairy tales and bloody stories, only immerse children in empty fantasies and horrible imaginations, and can never educate children with the reasons and morals that can be delivered in fables. The third part of the article looks at how Locke's ideas on children's reading have greatly contributed to the flourishing of and changes in the publication of children's books. John Newbery (1713-1767), for example, is greatly influenced by Locke and becomes one of the first to publish children's books (Darton 7). Locke's educational thoughts reflect his empirical philosophy. Studying Locke's educational theory on gentlemen's reading can give us a glimpse of the social attitudes towards children's education and the history of children's literature in 18th century England.

A Multidisciplinary Study of Partnership, Matchmaking, and Marriage Business towards Building Online 7PS Dating Ecosystems to Create Global Successful SMEs through the 5th wave, I-Sustainability Plus and DCT Theories

Case Study: Sayehaye Mandegar Institute/SME

Hamid Doost Mohammadian, Arman Davari

Abstract

Small and Medium Enterprises (SMEs) play a major role in most economies, particularly in developing countries. SMEs account for most businesses worldwide and are important contributors to job creation and global. They represent about 95% of businesses and more than 50% of employment worldwide. Formal SMEs contribute up to 40% of national income (GDP) in emerging economies. We need innovative solutions to solve the problems of human societies, and SMEs can provide innovative solutions. Many SMEs around the world, especially in cyberspace, focus on matchmaking, partnership, and marriage. But there is no specific practical model for such institutions. In this research we try to provide a practical model for such SME businesses. In our paper we aim a multidisciplinary study of cultural differences models, combination of management, economy, social & cultural knowledges and giving an appropriate innovative global cultural smart sustainable SME model based on 7PS model for SMEs through the 5th wave/tomorrow's age theory which is focusing on Knowledge, Technology Business (KTB) model to enter to the edge of tomorrow with customizing culturally EU patterns and solutions for Iranian SMEs' challenges especially in Sayehaye Mandegar Institute/SME. As SMEs are formed more than 95% of businesses all around the World, they play indispensable role within developing economy sustainability as well as 7PS model sustainability. SMEs are introduced as economic backbone of each culture through improving inclusive and sustainable economic growth, providing employment and work for all, enhancing sustainable industrialization; even as tool to achieve sustainable development. This study considers the cultural differences and adaptation with using Doost Cultural Theory (DCT) to make the matchmaking, partnership, and marriage globally and successfully. In this research we planned to use the i-Sustainability Plus theory which is made of the trinity open innovation, sustainability, and modern smart digital technologies e.g. Artificial Intelligence (AI) for creating a comprehensive smart data

warehouse system/app of singles people in the world. This smart system/app with using AI, neural networks and machine learning could identify match people from all the world to find each other for a sustainable partnership, marriage, and family. In our research we have been looking for a solution for an effectiveness of partnership, matchmaking, and marriage business in real life and not only in controlled usual psychological cultural methods and questionnaire adjustment and qualitative evaluation, but also with quantitative methods and 7PS laboratory measurements as well as paying special attention to cultural differences, dimensions and adaptation based on DCT.

Keywords: *Risk management, Iranian SMEs, Cultural dimension, 5th wave theory, i-Sustainability Plus Theory, 7PS model, Quality of Life, sustainability, DCT, KTB, dating/ matchmaking business, AI, neural networks and machine learning.*

Cluster: A Personality Disorder

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Cluster A personality disorder remains an important challenge in almost all of societies in the world. Much research about cluster A personality disorder have been carried out since 2000, which were aimed to solve the bad consequences of cluster A personality disorder. Here we describe a method of case study, which is used to reveal the pattern of manifestation of cluster A personality disorder and analysis the inducements. Three representative case studies reveal that cluster A personality disorder has serious harm to physical, mental, and social relations from the form of manifestation and external negative results. What can be extracted from the research is that stigma of cluster A personality disorder can be decreased by dimensions of mental and physical health, internalships and systematic treatment. The hypothesis is the stigma of cluster A personality disorder can be reduced by variable aspects, which is supported by three research questions separately targeted on dimensions of incentives, treatment, and social interaction. The whole study is devoted to reducing the stigma of cluster A personality disorder. There are impacts of improving mental and physical health, developing systematic treatment, and establishing better social relationships for those who suffered from cluster A personality disorder. The results illustrate that stigma can be improved in general and it can proceed within specific areas in our lives.

The Intersection of Aesthetics and Postfeminism: The Case of Cosmetic Surgery in Thailand

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Emerging after second wave feminism, postfeminism plays a salient role in the current society. Postfeminism is described as a term that celebrates young women's individualisation and their accomplishments in public realms, as opposed to their household chores. Scholars researching postfeminist culture have discussed how beauty practices including cosmetic surgery connote women's agency and oppression. In the current ethos in which languages around gender imbalances have sometimes been abandoned, many women repudiate the notion that they beautify themselves to please men. Still, patriarchy makes women's genuine empowerment difficult to find. Whilst men's muscled ideals are prevalent, aesthetic standards overall put greater pressure on women than on men. Women's lives have recently become bound up with self-monitoring, by regularly using beauty camera apps and taking selfies. Interestingly, in addition to the fact that Thai women's high educational and economic achievements are evident, they have also been preoccupied with consumer culture as a way of raising their social status. This is because the Thai society is entwined with the hierarchy. As for cosmetic surgery, Thailand has been ranked in the top 5 countries in Asia. Notwithstanding this, academics researching postfeminism have rarely explored cosmetic surgery in Thailand. Since Western societies are more individualistic compared to elsewhere, postfeminism is often only identified with white Western women.

To fill the aforementioned gaps to substantially contribute to the field of sociology, this PhD project explores the connections between postfeminism and beauty, using the Thai cosmetic surgery phenomenon as a case study. This conference presentation intends to elaborate upon the above literature to demonstrate why this PhD study chose to examine, in the context of postfeminism, how cosmetic surgery among young Thai women constitutes female self-pleasing, agency, and oppression. The project will conduct qualitative interviews with 40-50 Thai women aged 20-35 who have undergone cosmetic surgery. The preliminary thesis of this project is that the assumption that young Thai women today have cosmetic surgery only for their own confidence and quest for social status is unconvincing. In reality, they are hugely pressured by patriarchal aesthetic demands that oppress them to monitor their bodies and then choose to have cosmetic surgery. It is hoped that this PhD study can eventually lead to a deeper understanding of how heavily women are judged for performances of body work.

The influence of Public Policy in USOs performance: The Spanish case

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Academic entrepreneurship is one of the main research fields over the last 20 years, specifically due to the interest of policy makers in this topic. Initially, this interest is focused on the creation of University Spin-Off firms (USOs). The consequences of this interest are reflected in the public support of regional and national governments in all life stages of the USO. If initially this support was focused on the creation of these companies, nowadays, the support has been focused on existing ones, in order to increase their survival. This is due to the low growth in the invoicing of the USO after being founded. In other words, the simple creation of USO, without them being able to survive or create value, is useless. In this post-Covid era, this research is, even, more relevant, due to the necessity of looking for a sustainable and technological economic growth to alleviate the serious economic consequences of this pandemic. Indeed, those countries with an economy more based on knowledge and technology have suffered less from the consequences of the economic crisis caused by Covid-19 compared to other countries with a

more traditional economy. In this sense, USOs growth represents an opportunity, since the definition of USO implies that it is a company based on the knowledge generated at the university. This generation of knowledge is based on, in most cases, the public funding (at least, in the European case, where the universities are subsidized by the public sector). Therefore, it is extremely important to study which public policies really make USOs improve their performance. In this line, the present paper focuses on studying the determining factors of successful USO (employment and sales growth). Through a backward sequential process is, we are going to analyse a data composed by 97 USO. We propose a support model based on seven dichotomous variables during the the USOs' first 5 years of life: training in business and marketing, drafting of the business plan, bureaucratic procedures for setting up the company, granting of space and infrastructures, business advice in commercial aspects, financial advice, direct financial support or investment in USOs' share capital and advertising support. Our results showed that support in training, business plan and bureaucracy are the most influential determinants of USOs' performance.

Consumer Behaviour in an International Environment

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The phenomenon of consumer behaviour is very complex and analyzed by various authors (Bamossy, Solomon, Hogg, Askegaard, 2006; Armstrong, Kotler, 2008; de Mooij, 2019). Environment and culture are named as one of the elements that have an influence on it. Therefore, the question of culture-based consumer behaviour arises. In order to examine the role of the cultural environment in consumer behaviour, the author decided to analyze the behaviour of Polish consumers in a different cultural environment.

The research was conducted in the form of an online survey among Polish consumers travelling abroad. The questionnaire has got 372 responses (N=372). Survey aimed to verify four hypotheses:

H1: Polish consumer behaviour is related to the cultural environment.

H2: Polish consumers while being abroad predominantly choose global brands.

H3: Polish consumers in Poland predominantly choose local brands.

H4: Behaviour of Polish consumers in the different cultural environment is related to their socio-demographical characteristics (financial status, age and level of education).

The results of the conducted research show that the first hypothesis (H1) turned out to be false. Research showed that Polish consumer behaviour is related to the type of bought product or service, not the cultural environment. When it comes to the second one (H2), we can say that it also was proved to be false. Polish consumers while being abroad do not favour one, a particular type of brand in all the types of goods and

services. Once again it depends on the type of bought good or service. Third hypothesis (H3) turned out to be true in three types of goods/services: everyday food products, eating out and private accommodations. However, it is false in the category of hostels and hotels. The last hypothesis (H4) is right in the case of two variables: financial status and age, but also is identified as false when it comes to the level of education. Research shows that Polish consumer behaviour is not connected to the cultural environment that consumers are currently in, but with the type of good or service they buy. We must be aware that the sample in the research is not representative and the conclusions refer only to it. However, it is big enough (N=362) to give some idea and inspiration for further analysis of consumer behaviour in an international environment.

From Caliban (Black Beast) to Kalibann (Human Tech Expert): Decolonization of the Mind in Dev Virahsawmy's Toufann: A Mauritian Fanstasy

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Abstract

A long walk from colonization to decolonization is ascertained by many playwrights, poets, authors and political leaders. We are in a continuous struggle to achieve it as colored people whether black or brown. As Homi Bhabha reminds "To be anglicized is emphatically not be English" and Caliban asserts in *The Tempest* "You taught me language, my profit on it, I know how to curse you". The labyrinth of Ambivalence carries the weight of white man's burden on its weak shoulders. Mimicry is no more a tool to copy but to retreat back to the center. Since postcolonialism speaks back to empire in an effective tongue, one can imagine the 'appropriation' of the past characters into 'mimic men' with a tinge of 'culture and lost empire' coming back. Shakespeare's Caliban in the 17th century is a black, wild, illiterate beastly being; a perfect object of colonization in the colonizers eye. After four centuries later; another Kalibann is born in Mauritius; An Enchanted cosmopolitan island with technology as its soul. A 'tempest' came in 1611 and swept away the black, emotional and weak Caliban; but now it is a 'toufann' which will outrun the old, sceptic tradition of slaving the colored beings. This is 21st century Kalibann, a handsome computer apprentice in the lab of Prospero; in love with his teacher's daughter Cordelia (Miranda). The play decolonizes the entirety of colonization with one sentence by Kordelia to her father Prospero; when he objects her love for Kalibann "it is enough for me that he has human blood". (*Toufann*)

Hence the present paper will widely focus on this Mauritian Fantasy by Dev Virahsawmy to discuss the 21st century emancipated, handsome and computer literate Kalibann as a child of Neo Millennials.

Key Words: Black is literate, Trans Nationalism, Neo Millennials.

FROM CALIBAN (BLACK BEAST) TO KALIBANN (HUMAN TECH EXPERT): DECOLONIZATION OF THE MIND IN DEV VIRAHSAWMY'S TOUFANN: A MAURITIAN FANTASY

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Abstract

Shakespeare's Caliban in the 17th century is a black, wild, illiterate beastly being; a perfect object of colonization in the colonizers eye. After four centuries later; another Kalibann is born in Mauritius; an enchanted cosmopolitan island with technology as its soul.

A 'tempest' came in 1611 and swept away the black, emotional and weak Caliban; but now it is a 'toufann' which will outrun the old, sceptic tradition of slaving the coloured beings. This is 21st century Kalibann, a handsome computer apprentice in the lab of Prospero; in love with his teacher's daughter Kordelia (Miranda). The play decolonizes the entirety of colonization with one sentence by Kordelia to her father Prospero; when he objects her love for Kalibann on the pretext that he is a human being too. Hence the present paper will widely focus on this Mauritian Fantasy by Dev Virahsawmy to discuss the 21st century emancipated, handsome and computer-literate Kalibann as a child of Neo Millennials.

Key Words: Black is literate, Trans Nationalism, Neo Millennials.

Introduction

A long walk from colonization to decolonization is ascertained by many playwrights, poets, authors and political leaders. We are in a continuous struggle to achieve it as coloured people whether black or brown. As Homi Bhabha reminds "To be anglicized is emphatically not be English" (1994:87) and Caliban asserts in *The Tempest* "You taught me language, my profit on it, I know how to curse you" (Shakespeare, 2006, 1.2.364-365). The labyrinth of Ambivalence carries the weight of the white man's burden on its weak shoulders. Mimicry is no more a tool to copy but to retreat back to the center. Since post colonialism speaks back to empire in an effective tongue, one can imagine the 'appropriation' of the past characters into 'mimic men' with a tinge of 'culture and lost empire' coming back.

The following pages deal with issues faced by the colonized while colonial rule and in the process of decolonization by analyzing and comparing two character namely Caliban (from Shakespeare's play *The Tempest*) and Kalibann (from Virahsawmy's adaptation of *The Tempest "Toufann: A Mauritian Fantasy"*)

SHAKESPEARE'S THE TEMPEST AS A COLONIAL DISCOURSE

The Tempest is a five act play by William Shakespeare, first performed around 1611 and published in the First Folio of 1623. During the Shakespearean era, new lands were being explored and taken under the English rule. This is manifested in his writings, especially in *The Tempest*, which was written in early 1611 and is most often interpreted with post-colonial lens. The postcolonial analysis of *The Tempest* began in 1950 after the publication of *Psychology of Colonization* by Octave Mannoni.

To understand post-colonial analysis, it is imperative to discuss colonialism first. Colonialism is the subjugation of the powerless by the powerful. Simply put, it refers to the practice of controlling and exploiting another country or area. Ronald Horvath defines it as; "it seems generally, if not universally, agreed that colonialism is a form of domination – the control by individuals or groups over the territory and/or behavior of other individuals or groups" (1972:45). The play revolves around Prospero, the exiled ruler of Milan who possesses magical powers and lives on a remote island with his daughter Miranda. He has enslaved the natives of the island; Caliban and Ariel and forces them to do his bidding. Prospero intentionally wrecks a ship carrying Alonso, the King of Naples; Ferdinand, his son; Sebastian, his brother; Gonzalo, his counsellor; Trinculo, a jester; Stephano, a drunken butler; Antonio, the Duke of Milan and Prospero's brother, to take revenge on Antonio who usurped his throne. Prospero intends to make Miranda and Ferdinand fall in love with each other.

Coming to the post-colonial analysis, through the character of Prospero and Caliban and their mutual conflict, Shakespeare portrays the colonizer-colonized relationship in general. When Prospero came to the island with his daughter, Caliban, a native of the island whose name is an anagram of 'Cannibal', doesn't object, as Prospero and Miranda seem kind and treat him well. Caliban responds to their generosity, by sharing the bounties and secrets of the island with them;

"When thou cam'st first
Thou strok'st me,and made much of me. Wouldst give me
Water with berries in't. And teach me how
To name the bigger light,and how the less
That burn by day and night. And then I loved thee,
And showed thee all the qualities o'th'isle,
The fresh springs, brine-pits, barren place, and fertile.
Cursed be I that did so!
(Shakespeare, 2006, 1.2. 331-335)

Mannoni aptly states that "Caliban does not complain of being exploited; he complains rather of being betrayed' (1952:106). Like most colonizers, Prospero is a scheming and manipulative tyrant. He uses his magical power to enslave Caliban and Ariel, who is a spirit. They are forced to act according to Prospero's whim. Not only the colonizers unjustly exploit the colonized, but they also justify it with the false claim that the colonized are ignorant and foolish and need to be controlled by someone better and wiser than them, which, the colonized wrongly believe they are. As Young aptly states; "Colonial and imperial rule was legitimized by anthropological theories which increasingly portrayed the peoples of the colonized world as inferior, childlike, or feminine, incapable of looking after themselves "(2003:2). Similarly, Prospero repeatedly uses the weaknesses of the colonized to assert his power and keep them from rebelling against him. He humiliates the natives calling Sycorax a "hag" and addresses Caliban with derogatory terms; "Thou poisonous slave, got by the Devil himself / Upon thy wicked dam, come forth!" (Shakespeare, 2006, 1.2 320) He also rebukes and reminds Ariel of his painful past when Ariel tries to talk about the pact between him and Prospero that he will be freed a year early if he continues to perform

any task that Prospero asks him to do. He also threatens to impose physical pain on Caliban, and succeeds to control him by fear. In order to describe this nature of the colonizers in general and Prospero in particular, Mannoni coined the term "' Prospero complex', which draws from the inside, as it were, a picture of the paternalist colonial, with his pride, his neurotic impatience, and his desire to dominate" (1952:110). To simplify the concept, Prospero complex refers to the colonizer's predisposition to dominate and rule, born of their own inferiority complex and hunger for power.

In the process of colonization, the colonizers decided to educate the colonized for their own selfish motives. Miranda reminds Caliban that she is the one who freed him from his ignorant and savage existence:

"Abhorrèd slave,
Which any print of goodness wilt not take,
Being capable of all ill. I pitied thee,
Took pains to make thee speak,taught thee each hour
One thing or other.When thou didst not, savage,
Know thine own meaning,but wouldst gabble like
A thing most brutish,I endowed thy purposes
With words that made them known."
(Shakespeare, 2006, 1.2, 352-359)

Arguably, Miranda, the colonizer did not impart education to Caliban merely out of the goodness of her heart, but so that Caliban can be a worthy and able servant, just like the British imparted English education to the Indians with the goal of producing "a class who may be interpreters between us and the millions whom we govern, -a class of persons Indian in blood and colour, but English in tastes, in opinions, in morals and in intellect" (Macaulay, 1835:8).

Prospero takes control of the island and establishes a new order, in which the indigenous can only exist as a slave. Caliban reminds us of all the marginalized and colonized "others". He is considered an eyesore, a savage brute by Prospero and Miranda just because he looks and speaks differently and doesn't fit in their criteria of a "gentleman". Towards the end of the play, Prospero frees Ariel but not Caliban owing to his rebellious nature. Prospero, like most inhumane colonizers and slave owners, expects complete loyalty and obedience from Caliban and Ariel. He wrongly believes that Caliban should be grateful to him for all the education and manners he has imparted. What he completely fails to realize is the fact that he has robbed the natives of their culture, language and freedom. The play aptly depicts the plight of the colonized. Mannoni put forth the concept of "dependence complex" (1952:40) to explain the situation of the colonized. He declared that the dependence and reliance on the colonizer caused inferiority; hence inferiority and dependence on the colonizer are inter-related. He explains this with the contrasting psyche of Prospero, the colonizer and master and Caliban, the colonized and the slave. Caliban, like most colonized and enslaved people, has an inferiority complex, he never tries to attain freedom, and he just wants to be treated better. Even when he plots with Trinculo and Stephano to muder Prospero it is, as Mannoni puts it: not to win his freedom, for he could not support freedom, but to have a new master whose 'foot-licker' he can become. He is delighted at the prospect. It would be hard to find a better example of the dependence complex in its pure state. (1952:105-106)

THE ELEMENT OF ASSERTION IN CALIBAN AS THE COLONIZED OBJECT

"Post-colonial readings of *The Tempest* were inspired by the decolonization movements of the 1960s and 1970s in Africa, the Caribbean and Latin America" (Singh 2016). Critics started reanalysing the plight of Caliban and the controlling nature of Prospero. Caliban is continuously dehumanized and degraded by Prospero. An enslaved Caliban attempts to assert his right over the island; "This island's mine by Sycorax my mother, / which thou tak'st from me" (Shakespeare, 2006, 1.2.331). Caliban's each attempt to express his right on the island fails, even when he tries to remind Prospero how he (Prospero) is exploiting him and preventing to walk freely even on his own island; "For I am all the subjects that you have, / Which first was mine own king. And here you sty me/ in this hard rock, whiles you do keep from me/ the rest o'th'island" (Shakespeare, 2006, 1.2.341-344). He is rebuked by Prospero and called a "lying slave" (Shakespeare, 2006, 1.2.345)

What is resented in Caliban is not really his physical appearance, his bestiality, his 'evil' instincts -- for after all it is a matter of pride to keep half-tamed apes or other wild animals in one's household -- but that he should claim to be a person in his own right and from time to time show that he has a will of his own. (Mannoni 1952:117)

"Throughout the period of colonial rule, colonized people contested this domination through many forms of active and passive resistance" (Young 2003:3). Caliban has realized that no matter how many manners or graces he learns; he'll always be a slave and a second-class citizen. Consequently, he becomes bitter and violent, which further reinforces Prospero's opinion of him being a savage. So, Caliban plots with Stephano and Trinculo to murder Prospero, but when Prospero, who is a lot more powerful than Caliban comes to know about this plan, he immediately suppresses Caliban's violent rebellious attempts and expresses his utter disappointment on his failed attempts to "educate and civilize" Caliban;

"A devil,a born devil,on whose nature
Nurture can never stick.On whom my pains,
Humanely taken,all,all lost,quite lost,
And,as with age,his body uglier grows,
So his mind cankers.I will plague them all,
Even to roaring."
(Shakespeare, 2006, 4.1.187-190)

POST-COLONIALISM AND WRITING BACK TO THE EMPIRE

Mimicry

Due to the constant brainwashing by the colonizers, the colonized start to acknowledge the power of the colonizers and start considering them as superiors. For instance, in *The Tempest*, Caliban reveals his thoughts; "I must obey.His art is of such power,/ It would control my dam's god Setebos, / And make a vassal of him" (Shakespeare, 2006, 1.2.373-374). Fanon aptly sums up the psychology of the colonizer and the colonized as; "The Negro enslaved by his inferiority; the white man enslaved by his superiority alike behave in accordance with a neurotic orientation" (2008:43).

The 'inferior being' always serves as scapegoat; (Mannoni 1952:106), colonizers often blame the colonized for their own evil deeds and intentions. Mannoni believes: "This applies especially to incestuous intentions (1952:106). He questions Prospero's claims regarding the alleged rape of Miranda. He goes on to say that Prospero imagines (his daughter)" to have been violated by a negro; he wants to rid himself of guilt by putting the blame for his bad thoughts on someone else" (Mannoni 1952:106). This

is where mimicry comes in. From dresses to literature, the colonized start to imitate the colonizer, thinking that their ways are better than the indigenous ones. Consequently, “it caused those from the periphery to immerse themselves in the imported culture, denying their origins in an attempt to become ‘more English than the English’” (Ashcroft, Griffiths, Tiffin, 2002:4). Mimicry stems from the creation of the feeling of inferiority in the colonized by the colonizer, as Fanon puts it; “The feeling of inferiority of the colonized is the correlative to the European’s feeling of superiority. Let us have the courage to say it outright: It is the racist who creates his inferior” (2008:69). The inferiority complex among the colonized subjects is created by the colonizers who make the colonized feel uncultured and insignificant which results in "a constant effort to run away from his own individuality, to annihilate his own presence"(Fanon 2008:43).

Ambivalence

Due to the false belief of the superiority of the colonizer and his culture, the colonized engage in thoughtless imitation of the colonizer, which in turn, results in the decay of the indigenous culture. The colonized start hating the colonizer (for attacking their cultural beliefs) and loving the same colonizers too (because of the language and cultural aspects of the colonizers.) This is often termed as an 'ambivalent relationship'.

Apart from being constantly tortured and enslaved, Caliban was also alienated. The concept of the ‘Other’ is propagated by Edward Said (1935-2003) in his work *Orientalism* (1978). The Orient or Non-Europeans are considered backward, ignorant and savage, while on the other hand the ‘Occident’ or the Europeans are thought of as modern, civilized, and reasonable. The Occidents unite as ‘we’ and everyone else is regarded as the ‘Other’. Caliban was also mistreated on the same ground.

Learning the colonizer's language has a twofold impact. On one hand it becomes a means to speak back to them, as Caliban states; "You taught me language,and my.profit on’t/Is,I know how to curse"(Shakespeare, 2006, 1.2.364-365). But language itself is another means of destroying the indigenous culture. "In colonial conquest, language did to the mind what the sword did to the bodies of the colonised" (Thiong'o 2017). Caliban resents his colonizers for forcing him to learn their language; "The red plague rid you/ For learning me your language!" (Shakespeare, 2006, 1.2.366). It is also a means of imitating and appropriating the colonizer, as Fanon puts it “Negro who wants to be white will be the whiter as he gains greater mastery of the cultural tool that language is” (2008:25).

Hybridity and Liminality

After going through the phase of mimicry, the colonized and enslaved experience a loss of identity, as they are neither completely like the colonizers, nor they can relate to their own cultural values. Bhabha aptly points out that the mimicry makes the colonized “almost the same, but not quite” (Bhabha 1994:86) to the colonizers they are mimicking. Consequently, the colonized become a 'hybrid' generation. Uma Parameswaran uses the term "Trishanku' to describe this kind of people, who are swinging between two worlds but belonging to neither of them. For instance, Caliban has learnt the manners and language of his colonizers, but he has been estranged from his own culture. And then they reach a liminal space. The term liminality has been derived from the Latin word ‘Limen’ which means ‘threshold’. It is used to refer to the ‘in-between spaces’ of ambiguity in diasporic identities.

As evident from the above discussion, *The Tempest* raises a number of questions about colonization, colonizer, and the colonized. This is one of the reasons why it has been adapted so many times in the form of plays, novels, films, radio shows making it a timeless work of literature.

TOUFANN: A MAURITIAN FANTASY BY DEV VIRAHSAWMY

Dev Virahsawmy is a Mauritian dramatist, poet and politician. He writes both in English and French but his is mostly known for writing in Mauritian Creole. Dev Virahsawmy's *Toufann: A Mauritian Fantasy* is a landmark play in the history of postcolonial plays as it revisits Shakespeare's *The Tempes*t in a new light. Originally written in Mauritian Creole and translated in English by Nisha and Michael Walling, it was first performed in 1999 at Border Crossings, London. The title has been derived from a Hindi word 'Toufann' which means 'storm'. The play's original title was "Ennfanteziantrwaak," which means "a fantasy in three acts. Virahsawmy's writing of translations and adaptations of Shakespeare puts him alongside a range of other writers from the African continent who have found in Shakespeare a vehicle to represent and redress postcolonial concerns and issues" (Sandten 2016:40).
Virahsawmy has translated and adapted many Shakespearean works in Mauritian Creole; Zenaral Makbess (A translation of Macbeth, 1997), Enn ta Senn Dan Vid (a translation of Much Ado About Nothing, 1995) Zil Sezar (a translation of Julius Ceasar, 1987), and *Toufann* (an adaptation of *The Tempest*, *Hamlet*, *King Lear* and *Othello*, 1991). Sandten calls these "individual re-writes of Shakespeare emerging from postcolonial spaces" (2016:40). She further sums up their bright side as; "specific national, local, regional or indigenous contexts help to redefine and create new dimensions in which to understand the Shakespearean play in another light"(2016:40). Although Virahsawmy translated a lot of Shakespearean works in Mauritian Creole, in *Toufann,* instead of merely translating *The Tempest*, he: uses Shakespeare's themes, his language and his characters as a trigger for social commentary and critical reflection on the political, cultural and economic realities of Mauritian everyday life, as well as universal concerns that affect communities around the globe in postcolonial societies and beyond. (Sandten, 2016:54)

Unlike so many adaptations of Shakespeare *Toufann* is not only a postcolonial adaptation, it's an effort to recreate, rewrite the play in an independent atmosphere of 21st century times which gives the sense of 'transcreation' to the play. *Toufann* is a post-colonial play in three acts. The play is set in a technically advanced island Prospero is a tech expert training a young handsome man named Kalibann, who is romantically involved with his daughter. Another inhabitant of this tech island is a robot named Aryel, who develops human feelings later on in the play. Ferjinan, the Prince of Naples is a barren homosexual. A ship carrying Prospero's brother Yago, King Lir, his brother Edmon is wrecked on the island. Prospero intends to take revenge by marrying his daughter Kordelia to Ferjinan, the King's son, but his plans fail as his daughter and Ferjinan are not attracted to each other at all. Kaspalto and Dammarro are the traditional clowns of Mauritian culture. They were the passengers of the ruined ship and they are enjoying their time on the island.

The play also highlights the issue of decolonization. Moritz Julius Bonn (1873–1965), coined the term 'decolonization' in the 1930s (Rothermund, 2006:14). In simple words, decolonization refers to the transfer of power from the colonizer to the colonized. Jansen and Osterhammel define decolonization as"a term for one of the most dramatic processes in modern history: the disappearance of empire as a political form, and the end of racial hierarchy as a widely accepted political ideology and structuring principle of world order"(2017:17). In the era of decolonization, there is a new trend of a "paradigm shift from the literary practice of "writing back" and "rewriting," which aims at correcting colonial misrepresentations, towards a more differentiated, multifaceted and necessarily complex approach of transcultural adaptation"(Sandten, 2016:40).

THE NEW MILLENNIALS TOUFANN BY DEV VIRAHSAWMY IN THE LATE 20TH CENTURY

Toufann presents a world quite different from the Shakespearean one. Instead of magic and spirits, the island is now the epitome of technology. Prospero is a computer expert who has created a robot named Aryel. Kalibann is now a good-looking, well-educated apprentice of Prospero. Kordelia, Prospero's daughter is no longer dominated by the patriarchal authority of her father. She is an independent woman, in charge of her own body, and is carrying her lover Kalibann's child. She is also a feminist who reads Simon de Beauvoir's *Second Sex*. The play depicts change in all its aspects. After four centuries of *The Tempes*t, Kalibann has learnt to speak for himself and not only to speak back or mimic the colonizer. He has successfully appropriated the colonizer and is now creating "an identity of his own" i.e., he is in the phase of 'Authentic selfhood'. Arguably, Kordelia is also going through the same stage wherein she has her own identity. She is no longer confined by the conventional patriarchal rules, for instance, she is in charge of her sexual life and her virginity is not something that has to be protected by her father. She is also in control of the decision to have babies even before marriage.

Apart from the change in Kordelia and Kalibann's character, Virahsawmy has also expressed his support for transgenders and has championed homosexual relationships via the character of Ferjinan. Instead of portraying him like the charming prince Ferdinand, Virahsawmy has presented him in a realistic light. Virahsawmy has also depicted the professional relationship between man and robots by the character of Aryel, who works for Prospero. He has also presented the possibility of romantic relationship between a human and robots by the love story of Aryel and Ferjinan, proving that even robots can have emotions, to the dismay of their creators. Aryel is no longer a confined spirit forced to obey Prospero in all circumstances in the hopes of getting his freedom back. He's now a high-tech robot, who doesn't need the permission and approval of Prospero to have romantic feelings for someone.

The play also presents the changed romantic scenario. Love is no longer bound by color, race, sexuality or other aspects. Not everyone has to be a perfect match like in the love story of a prince (Ferdinand) and a princess (Miranda), nor do they need the permission and approval of their guardians or society. A strong independent woman (Kordelia) can love and marry a man of color (Kalibann), and a robot (Aryel) can be attracted to a homosexual male (Ferjinan).

COMPUTER EXPERT KALIBANN: A HOPE FOR THE COMMONERS TO LEAD THE WORLD

Kalibann is a ray of hope for all the previously colonized and enslaved people. The colonial hierarchy has been shattered and Prospero is now just a teacher of Kalibann, not his master. Kalibann is no more an ugly savage beast in the eyes of Prospero and his daughter, he is an equal. Kordelia, the daughter of Prospero, unlike Miranda, is not trying to civilize Kalibann, and is carrying his child. She loves Kalibann and persuades Prospero for their marriage by asserting the equality of his romantic partner; "It is enough for me that he has human blood" (Virahsawmy, 1999, 3.2 p. 251).

Kalibann's professional and personal achievements are a vivid depiction of how far the 'others' have come. From his humble beginnings as a bastard offspring of a white pirate and black woman named Bangoya, Kalibann, after working under Prospero, is about to open his own lab and marry his teacher's white daughter Kordelia. Being a mulatto himself, Kalibann is an excellent example of all the marginalized mixed-race people who question their identity on a daily basis, as he is comfortable in his own skin and doesn't feel the need to mimic white folks on the false pretext that they are superior to him.

TRANSCULTURATION, TRANSLATION, AND CULTURAL CREOLIZATION IN TOUFANN: A MAURITIAN FANTASY

In the post-colonial era, translated texts have become more than a means for the European colonizers to access and comprehend the native literature. As Etherton puts it; "Translation, transposition and adaptation have been endemic in European drama: they are the means by which play-texts have survived the process of history, and have become part of a 'great tradition" (1982, p. 102). *Toufann: A Mauritian Fantasy* by Dev Virahsawmy is one of such adaptations. Etherton describes some features of such 'tradaptations', which are also present in *Toufann:*

1. Names of people, places and titles may be changed. In *Toufann*, Virahsawmy slightly changes the spelling of a few names, for instance 'Caliban' to 'Kalibann', 'Ariel' to 'Aryel', 'Ferdinand' to 'Ferjinan'. He also names some characters after other Shakespearean characters; Kordelia, King Lir, Yago. The period or the setting may be changed.
2. The framework, or context, may be changed. Virahsawmy sets the play on a remote island too but the island is not the mysterious magical island that Shakespeare depicts. Instead, it is a technically advanced island.
3. The story may be changed. Virahsawmy has completely revolutionized the storyline to match the advanced age the play is set in.
4. The themes may be changed. Because of the change in the story, a few new themes have been introduced too (1982 p. 103).

Third world authors adapt and translate texts in order to fit them in their own context, and to reflect the hopes, pains and struggles of the formerly colonized. This is where trans-culturation comes in. As the translated work of art is a recreation of the European work, hence it becomes the meeting point of the cultural, regional and artistic elements of the colonizer and the colonized, the master and slave, the dominant and the subservient. *Toufann* was originally written in Mauritian Creole and was later translated into English by Nisha and Michael Walling. But there are some phrases and meanings that just cannot be translated, for instance the phrase "Mari sa" (Bravo) in *Toufann* could not be translated into English.
Mauritius is the hub of many languages including French, English, Bhojpuri, and Hindi creating a linguistic as well as cultural Creole. The impact of living in such a multilingual and multicultural land can be clearly seen in Virahsawmy's adaptation of *The Tempest.* Kaspalto and Dammaro, comic characters in *Toufann* sing and dance on Indian songs like 'Dam maro dam'.

From Caliban (Black Beast) to Kalibann (Tech Expert): *The Tempest* and *Toufann*

Identity is the most important difference between Caliban and Kalibann. Caliban is undergoing an identity crisis. He has what can be termed as a fluid identity. Ashcroft, Griffith, Tiffin discusses this issue; "A valid and active sense of self may have been eroded by dislocation, resulting from migration, the experience of enslavement, transportation, or 'voluntary' removal for indentured labour. Or it may have been destroyed by cultural denigration..." (2002:9).
He has been enslaved, forced to abandon his own language for the sake of his colonizer's language, and he is constantly humiliated for his physical appearance and forced to work for Prospero. Fanon argues; "...systematic negation of the other person and a furious determination to deny the other person all attributes of humanity, colonialism forces the people it dominates to ask themselves the question constantly: "In reality, who am I?" (1961, p.182) Caliban is not allowed to have any feelings. Moreover,

Caliban has already been through the 'adopt' phase of colonization. He mimics the behavior of his masters and speaks their tongue. He is adapting to his colonizer's cultural norms too. On the other hand, Kalibann is in the adept phase. He speaks their language, acts and works like them with an unquestioning acceptance of the authority of the colonizer's models.

Conclusion

The play aptly presents the struggles of the colonized and enslaved like Caliban, who are not only enslaved and forced to work for a white master against their will, but also have to go through psychological torture. They are constantly treated as an 'other' and regarded a hideous beast. It also shows the positive changes in the life of marginalized, colonized, and black folks by the character of Kalibann and how the 'others' like him have shattered the shackles of colonial rule and overcame all sorts of limitations such as inferiority complex to become an equal to the elites like Prospero and Kordelia.

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The importance of physical activity to maintain students' mental health during COVID-19 pandemic

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Abstract

All of school and university closures and shocking newspaper and news headlines are truly causing anxiety among university students. This represents a natural reaction to a pandemic situation. The entire world has overcome a terrible period with several effects upon our mental, emotional and physical condition. The most common reactions to COVID-19 pandemic were the anxiety and depressed moods caused by the alarming health issues. The SARS-Cov-2 outbreak has nearly paralyzed the whole world. Therefore, we trust and support that a healthy body is absolutely essential for a healthy mind and vice-versa. More than ever, the connection between mental and physical health is enhanced through the physical activities and workouts, which represent a compensatory and stress-free element. Purpose of Study: The main aim of this research is to find or spot certain methods and elements which help us to increase both our mental and physical state. The observation method,The literature review method, The sociological research (conversation, questionnary etc.); The mathematical statistics method; The graphoanalytical method Involved subjects: The research was achieved at Petroleum-Gas University of Ploiesti on a group composed of 83 students (boys and girls) of Faculty of Petroleum Technology and Petrochemistry (P.T.T). I mention that the group was aleatory selected. The only condition of selection was the attendance of the same university. Attending the same university and being in the same year conclude that most of students have got a lot of interests, aspirations and hobbies in common. The physical activity represents an enormous opportunity in maintaining our mental health during the SARS-CoV-2 outbreak. Any sort of physical activity or workouts help us to improve an optimal state of mind and form a strong personality, in order to overcome anxiety and depression, continuing the educational acts. The physical activities, under the form of any kind of workouts are seen as a biding agent which link the physical health to a healthy mind. Students believe that sports have huge benefits on their feelings, helping them to overcome Coronavirus pandemic without any kind of mental and physical harassments.

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