

META-ANALYSIS OF INTELLECTUAL CAPITAL PRIOR TO COVID-19

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ABSTRACT

The objective of the present study was to reveal the homogeneous random effects of the intellectual capital variable with respect to other variables, both determining and indicating. A systematic and retrospective review was carried out with a sample of studies published in international repositories, considering the publication threshold from 2018 to 2020, as well as the prestige of being included in repositories and being cited. Confidence intervals of 10 to 86 were found in which the effect sizes were included, but high percentages of attribution to chance plus randomness were observed, suggesting the extension of the study and the modification of the selection criteria.

Keywords: Meta-Analysis, Specification, Model, Intellectual, Capital.

INTRODUCTION

At the time this work is written, the policies to mitigate the pandemic caused by the coronavirus SARS-CoV-2 and Covid-19 have reported 17 million infected, 9 million sick and 700 thousand deaths in the world (Hernandez, 2020). In Mexico, 500 thousand have been infected, 300 thousand sickened and 50 thousand died.

In this scenario of risk, uncertain situation and health contingency, the formation of human and intellectual capital is centered in the virtual classroom (Garcia, 2020). Unlike the traditional classroom where the stage is controlled by the teacher, in the electronic classroom technology defines the type of communication between the parties involved.

The aim of this study is to specify a model for the study of social entrepreneurship in household heads. From a review of the literature, the variables that allowed the systematization of the determinants of entrepreneurship paths are extracted.

How is the capital formation process reported in the literature from 2018 to 2020 in international repositories, considering the prestige of the source?

The hypothesis that guides this study refers to the fact that the determinants of the formation of intellectual capital are different in the traditional classroom with respect to the virtual classroom, as well as among users, considering their acceptance, adoption and compatibility of technology with their school functions (Bustos, 2021).

In this way, the theoretical, conceptual and empirical frameworks related to the formation of intellectual capital in risk scenarios and uncertain contingencies are exposed. Next, the methodological decisions to address the phenomenon are described and the corresponding

diagnosis is presented. Discussion of the findings with other works is included and the implications in the virtual classroom are reflected upon.

Theory of Intellectual Capital

The principles that guide the rational choice lie in the tastes and preferences crystallizing objectives of the actors (Sanchez, 2020). Therefore, before taking any decision binding preferences strategies, achieve collect information that will determine the election. If individuals rather have an indeterminate number of tastes, objectives and goals, then your preference swill no longer depend on their capacity of choice and action. Therefore, they act in a non - rational way.

The rational choice theory also warns that a decision is a result of an estimate of the costs and benefits of carrying out an effort regardless of their degree of significance (Quiroz, 2020). This is a utilitarian dimension in which control of a situation from establishing a favorable balance of benefits *versus* costs will determine the election. More specifically, the benefits and costs translate into a ratio of risk, effort and reward. This means that a choice be rational when the risks and efforts are minimal provided that the rewards are greater.

In contrast, when the recognition of an effort and risk not up to expectations, then the choice has not been entirely rational and rather approaches an irrational dimension if the risks and efforts are increasing and intense with respect to the absence of rewards (Korstanje, 2020). This is because the individual who tries is committed to the risks that will be activated by profit expectations.

Integrating each of the variables represents a series of paths in which the correlations explain each choice (Elizarraraz, 2020). The rational choice explained in general terms the process by which preferences are the determining factor by other factors which generate information or sense an atmosphere of certainty when deciding and act accordingly. To the extent such information is available, accessible and actionable, then the rational choice will emerge as an option, but rather proliferates ambiguity, then a non - rational decision will be generated with irrational consequences.

However, when information is not available or is very abstract, rational choice is replaced by a tighter option to culture; values and norms of people with respect to a contingency which no known precedent some, but people always react the same way (Sanchez, 2019).

Studies of Intellectual Capital

If rational choice is brewing from preferences based on information available to determine tastes and objectives, the prospective attitude suggests that the absence of information creates uncertainty that determines risk aversion or waiver of certain gains and risk appetite when losses are imminent (Bermudez, 2019). Thus, the utility, benefit or happiness crystallizes into losses or gains, circumventing the process of rational choice and legitimizing an irrational choice.

Therefore, a prospective is more than a decision lies in attitude and expectation of risk or certainty to gains and losses in the immediate future. In that sense, a retrospective is an attitude that is the same relations but compared to last (Carreon, 2019).

The prospective attitude is a hinge between rational choice and reasoned action (Aguilar, 2019). Each of these theoretical and conceptual frameworks based its scope and limits from the availability of information, if the individual is able to assume an attitude, make a decision or take an action that corresponds to the available information and representation that you have it.

Regarding the specification of models for the study of intellectual capital, the dimensions of trust: experiences, knowledge, capacities, emotions and abilities (Juarez, 2020). Considering the keywords and the 2015-2020 publication periods, they established eight hypotheses of three-way dependency relationships between nine variables raised in the state of knowledge.

Modeling of Intellectual Capital

Unlike the rational choice theory that focuses on the usefulness of the information available and the theory of prospective attitude that focuses its interest in the certainty of the information, the theory of reasoned action assumes that information, any it is, it is a general environment that will influence the behavior to the extent that information is transformed into rules (Martinez, 2019). This is because the theory of reasoned action considers that all information is cognitively process.

Therefore, an overview of the environment, their demands and opportunities conducive categories of accessible and abundant availability of information that will influence a spendthrift behavior such as believing that jobs, wages and financial credits significantly increase (Moreno, 2019). On the contrary, if one considers that the context is rather recession and economic crisis, then austere styles, cooperative and innovative life will be adopted.

However, the theory of reasoned action, like the rational choice theory and the theory of prospective attitude pose a general scenario incident on a specific behavior without considering the current situation and specifies decision maker (Bolivar, 2019). Social about entrepreneurship warn a process of deliberate, planned and systematic rational choice which promote intellectual capital formation are predominant determinants.

METHOD

Documentary work was carried out with a selection of sources indexed to international repositories such as Academy, Copernicus, Dialnet, Ebsco, Frontiers Latindex, Redalyc, Scielo, Scopus, WoS, Zenodo & Zotero, considering the keywords of "specification" and "intellectual capital" in the period from 2015 to 2020 Table 1.

	Author	Criterion	Model
Academy	Aguilar	Formative	IC ç Skills
Copernicus	Bermudez	Reflective	IC è Experience
Dialnet	Bolivar	Formative	IC ç Trust
Ebsco	Carreon	Formative	IC ç Attitude
Frontiers	Sanchez	Reflective	IC è Knowledge
Latindex	Elizarraras	Formative	IC ç Commitment
Redalyc	Garcia	Reflective	IC è Innovation
Scielo	Hernandez	Formative	IC ç Productivity
Scopus	Korstanje	Formative	IC ç Competitiveness
WoS	Martinez	Reflective	IC è Satisfaction
Zenodo	Moreno	Formative	IC ç Happiness
Zotero	Quiroz	Reflective	IC è Empathy

Source: Elaborated with data study; IC = Intellectual Capital, ç Relations formative, è relations reflective

A search for summaries was carried out in order to subtract the indicators of intellectual capital, considering equation (1). Then, once the indicators of empathy, trust, commitment, entrepreneurship, productivity, competitiveness, innovation, satisfaction and happiness were selected, experts on the subject rated these indicators in order of importance, being 10 of greater importance and 0 of zero or no some importance Data were processed in the statistical analysis package for social sciences version 20.0

$$H^S = b(1-u)H^S$$

Percentages, contingencies and proportions were estimated to establish risk thresholds in decision-making regarding intellectual capital indicators.

RESULTS

The trust indicator obtained the highest percentage (25%) followed by commitment (22%), empathy (17%), entrepreneurship (13%), satisfaction (9%), innovation (6%), productivity (4%), competitiveness (3%), happiness (1%). This means that decision-making is a function of the level of trust, although the instrument does not specify the type of trust that can be organizational, interpersonal, intra-personal or technological.

The contingency parameters suggest significant differences between the decisions made based on intrapersonal trust with respect to interpersonal [$\chi^2=16,27$ (16 df) $p<05$]. In other words, as an educational process, intellectual capital is focused on internal capacities, experiences, skills, knowledge and emotions rather than their outsourcing when socializing knowledge.

The proportions of probability suggest that the formative process of intellectual capital, centered on the intra-personal confidence of abilities [OR=17,21(13,24 to 19,20)], skills [OR=18,21 (14,35 to 20,21)], knowledge [OR=15,43 (13,24 to 21,23)], experiences [OR = 18,20 (14,32 to 23,45)] and emotions [15,46 (10,21 to 22,31)], is at an allowable threshold of risk. It means then that the intervention of social work can be cemented in the formation of intellectual capital and its indicators of intra-personal confidence.

Regarding the meta-analysis, the thresholds of the effect sizes of the reviewed studies ranged between 10 and 86, with the percentages of attribution of these results being more random than random Table 2. This is so because the systematic review is updated and specialized in the formative and reflective criteria of intellectual capital.

	Author	Criterion	Model	CI	SE	Q	I²	T²	T	M
Academy	Aguilar	Formative	IC c Skills	13 to 56	25	16,54	40%	16	19	Year
Copernicus	Bermudez	Reflective	IC e Experience	16 to 67	44	16,32	35%	92	17	Year
Dialnet	Bolivar	Formative	IC c Trust	10 to 72	56	17,90	24%	47	15	Year
Ebsco	Carreon	Formative	IC c Attitude	23 to 80	62	16,32	36%	90	14	Repository
Frontiers	Sanchez	Reflective	ICe Knowledge	35 to 69	41	14,26	14%	16	16	Repository
Latindex	Elizarraras	Formative	IC c Commitment	41 to 86	52	16,58	57%	25	10	Citation
Redalyc	Garcia	Reflective	IC e Innovation	15 to 67	36	15,36	38%	96	17	Repository
Scielo	Hernandez	Formative	IC c Productivity	19 to 67	26	15,37	48%	16	15	Year
Scopus	Korstanje	Formative	IC c Competitiveness	18 to 69	35	19,21	39%	92	14	Repository
WoS	Martinez	Reflective	IC e Satisfaction	25 to 67	46	16,49	40%	13	11	Citation
Zenodo	Moreno	Formative	IC c Happiness	14 to 57	35	10,35	27%	46	13	Repository
Zotero	Quiroz	Reflective	IC e Empathy	26 to 68	43	16,58	31%	93	19	Repository

Source: Elaborated with data study; CI =Confidence Interval, SE = Size effect, $Q=Q$ = Squares the differences between individual effect sizes with respect to block size effects; I^2 =Percentage degree of heterogeneity attributed to random effects; T^2 =Degree of variance of the effects observed in the analyzed literature, T=Degree of standard deviation of the effects observed in the analyzed literature, M = Moderator variable.

However, the frontier of this knowledge seems to depend more on the year of publication (update) and the repository (prestige) than on the citation (specialization). Therefore, it is necessary to extend the publication period in order to be able to test the hypothesis of homogeneous random effects.

DISCUSSION

The contribution of the present work to the state of the question lies in the systematic, updated and specialized review of the intellectual capital from the formative criteria (determining relationships) and reflective (factorial dimensions). The results can only be attributable to the analysis sample, as well as to the review period established from 2018 to 2020.

In the present investigation, the thresholds of the size of the effects that are attributable more to chance than to randomness were established, although it is the year (update) and the repository (prestige) that are the moderating variables of these homogeneous effects, suggesting the extension of the work to the widest revision threshold, as well as the most prestigious repository such as Journal Citation Report.

The contribution of the specification of a model for the study of intellectual capital, considering the dimensions of intra-personal confidence in which skills, emotions, experiences, abilities and knowledge, in the qualification of experts, were in tolerable risk thresholds.

In relation to the literature where the intellectual captain is approached from non-formative organizational dimensions such as cooperation, tasks, goals, objectives or innovations, this paper suggests complementing these dimensions with intra-personal ones to establish differences between professional training and job training.

Future lines of research concerning the structural models of intellectual capital, human capital and social capital will allow establishing a predictive explanation of academic, professional and labor training.

CONCLUSION

Given that the information is not available or is a process able actor requiring immediate planning of their actions, the determinants of the planned behavior are those in which information can be delimited and specified depending on a particular situation or to an event which is the subjective control from decision-making and the information available and actionable.

The theory of planned behavior finds that perceived control is a significant determinant of behavior in direct and indirect mode. To interact with subjective norms and attitudes generate an intention that is also assumed as a determinant of behavior.

However, its perceived control, as the norm and attitude, depend on a set of beliefs about information availability. In this sense, the specification of a model would include variables that anticipate the behavior, but not from the beliefs of availability of information, but from provisions to cooperate by actors that form an entrepreneurial project to develop their skills, not only of choice, deliberation or planning, but innovation.

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