RISK PROPENSITY AND CLINICAL ENTREPRENEURSHIP IN PLATEAU STATE

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ABSTRACT

A relatively low number of entrepreneurs who pursue innovation, retain their services within the private healthcare practice. A fewer number of health practitioners take the risk to venture into clinical entrepreneurship despite the overwhelming need for innovation in the approach to mental health practice. Thus, this study was aimed at examining the influence of risk propensity (risk tolerance and risk aversion) on clinical entrepreneurship in Plateau State. Using sample of 191 from two hospitals in Plateau State (Jos University Teaching Hospital and Vom Christian Hospital) from a population of 222, comprising medical doctors, clinical psychologists, social workers, occupational therapists and nurses, the study collected data using primary sources (questionnaires). Items on the questionnaire were adapted from (Liñán & Chen, 2009; Meertens & Lion, 2008). Using logistic regression, the study analyzed collected data and found that risk tolerance significantly influences clinical entrepreneurship. However, risk aversion did not have any significant influence on clinical entrepreneurship. The study recommends that all disciplines within the healthcare services should be introduced to basic studies in entrepreneurship and business management as this will improve their skills in clinical entrepreneurship by enhancing their risk tolerance.

Keywords: *Clinical entrepreneurship, risk propensity, risk aversion, risk tolerance*

INTRODUCTION

Globally, scholars and clinicians are becoming attracted to the connections between entrepreneurship, and the healthcare industry. Clinical private practice within the health care industry has experienced recognition in developing countries partly due to the fact that most individuals seeking medical attention prefer private health care

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facilities to government health centers. Clinical entrepreneurs are perceived by most clients, to offer more efficient, accountable, and sustainable services (Basu, Andrews, Kishore, Panjabi & Stuckler, 2012). Numerous studies (Wilson, Whitaker & Whitford, 2012; Beninger, Li & Baaj, 2019) have succinctly confirmed that clinical entrepreneurship effectively places the health sector at a vantage position principally in the pursuit of innovation and efficient health care delivery. Few entrepreneurs who pursue innovation retain their services within private practice in the health care industry despite calls from researchers (Myers & Pronovost, 2017) to make management skills in general and particularly entrepreneurship a major component of medical education. According to the Federal Ministry of Health (2022, June) the aggregate of operational hospitals and clinics in Nigeria were approximately 39, 839. Of these, 1468 were located in Plateau State. While public or government owned institutions were 1093, clinical entrepreneurs owned less than a quarter (375) of the hospitals and clinics in Plateau State. Health care delivery in Plateau State seems to have been largely plagued by medical errors (which have accounted for the deaths of many), soaring cost of treatment in private healthcare facilities and dearth of clinical entrepreneurship in rural areas. One possible reason for the relatively low innovation within private practice in Plateau State, which, unfortunately, can be attributable to the unethical practices of some mental health practitioners, may be the risk propensity of clinicians (Harrison, Young, Butow, Salkeld & Solomon, 2005) yet there is little in the literature about the link between risk propensity and clinical entrepreneurship.

Arising from the aforementioned, the following questions are raised to guide this paper:

i. how does risk tolerance influence clinical entrepreneurship?
ii. to what extent does risk aversion influence clinical entrepreneurship?

This study was aimed at examining the influence of risk propensity on clinical entrepreneurship in Plateau State. Specifically the study examined the influence of:

i. risk tolerance on clinical entrepreneurship.
ii. risk aversion on clinical entrepreneurship.

In line with the aims, the following hypotheses have been formulated in the null form:

i. risk tolerance does not significantly influence clinical entrepreneurship.
ii. risk aversion does not significantly influence clinical entrepreneurship.

In order to achieve the objectives of this study, the paper has been divided into five sections beginning with introduction in section one, followed by literature review

and methodology in sections two and three, respectively. Section four has data analysis and interpretation while section five deals with conclusion and recommendations.

LITERATURE REVIEW

Concept of Clinical Entrepreneurship

Clinical entrepreneurship can be defined as the ability of healthcare professionals to apply predictive data and analytical tools to anticipate healthcare needs in a community, ensure care is adequate and necessary, and make statistical predictions about the care that will be required next. Although the idea of medical entrepreneurship seems intriguing, it has been limited in its dimension and scope particularly in relation to health sciences. The term Clinical Entrepreneurship encompasses a wider scope as it includes the creation of new business opportunities as a response to needs, tastes, demands and changes within the nursing profession (Reese, Young & Hutchinson, 2013), psychiatry (Agafonow & Perez, 2020) clinical psychology (Wiklund, Hatak, Lerner, Verheul, Thurik & Antshel, 2020) clinical social workers (Frazer, Westhuis, Daley & Phillips, 2009) and occupational therapists (Bennett & Bennett, 2000). More specifically, a clinical entrepreneur therefore is any healthcare professional (medical doctor, clinical psychologist, nurse, social worker, or occupational therapist) who is keenly aware of the strengths, weaknesses, opportunities and threats that exist within the healthcare sector and is able and intends to connect entrepreneurially by the creation of value for money and value for many (Raimi, 2019). These clinical entrepreneurs create relevant health-oriented value in the form of products, services, and technologies for double bottom-line (i.e., personal profit and social impact).

Concept of Risk Propensity

Risk propensity can be viewed as an individual's current tendency to take or avoid risk. The concept of risk propensity in entrepreneurship can be linked to the thoughts of Cantillon (1755) who associated it with the personality of an entrepreneur and also used such personality trait as a criterion for distinguishing individuals with entrepreneurial inclination from those without. Risk propensity conceptualized as the fortitude to devote resources towards opportunities with high probability of failure is more often than not determined either by the individual's risk tolerance or his/her risk aversion. In other words, it is the inclination to approach clinical entrepreneurship either enthusiastically or hesitantly. This means an individual may be risk tolerant or risk averse. One possible way to explain the concept is by

understanding that individuals differ with respect to the level of risks they are capable of accommodating in a given situation. Risk tolerance can be viewed as the level of risk exposure with which an individual is comfortable as opposed to being averse (Hanna, Waller & Finke, 2011). Risk aversion on the other hand is an individual's restrained attitude towards risk. In other words, a person with risk aversion often prefers a riskless outcome to any risky outcome with expected value (Mandrik & Bao, 2005). Researchers have compiled quite a bit of evidence that risk averse clinicians have a higher cost per patient than clinicians with risk tolerance (Fiscella, Franks, Zwanziger, Mooney, Sorbero & Williams, 2000).

Neoclassical Theory of Entrepreneurial Behaviour

The neo-classical school of thought (Schumpeter, 1934; Knight, 1921) assumes that the customer or consumer is ultimately the driver of market forces of supply and demand within a market. In other words, it is a theory that focuses on how the perception of the usefulness of products influence supply and demand. The consumers, therefore, determine the behaviour of entrepreneurs since the ultimate aim of the entrepreneur is customer satisfaction and the supplier's goal is profit maximization. Thus, it relates supply and demand to individuals' rationality and people's ability to maximize utility and profit. The entrepreneur is viewed as a heroic innovator who is brave in the face of uncertainties throughout the process of production. Consequently, the rational behaviours and goals of the entrepreneur in the market place drive the flow of resources, goods, services, and money within the economy. Neoclassical theory of entrepreneurial behaviour focuses on how individual players operate in an economy by emphasizing the exchange of goods and services as the main focus of economic analysis. The theory emphasizes the risk propensity of potential entrepreneurs in determining venture creation. The theory asserts that business risk bearing acts result in venture creation and consequently, profit making. Entrepreneurial risk-taking behaviours and innovativeness are critical factors to venture start-ups because uncertain bearers who embrace venture initiation process often create value through opportunity discovery. Consequently, the theory emphasizes the need for an emergence of typical maximizing class of risk bearers whose proclivities naturally inclines them towards intention to start a business. The major limitation of the theory is that it ignores the learning process in venture creation and limited focus on individuals who are risk averse. This paper is anchored on this theory.

Empirical Review

There is abundant evidence showing that peoples' intention for clinical entrepreneurship is influenced by their risk propensity (Lockwood, Jordan, Kunda, 2002; Zhao, Seibert & Hills, 2005). Faajir (2019) focused on entrepreneur's risk tolerance towards clinical entrepreneurship in Benue State, Nigeria. The study adopted a cross-sectional survey design. A sample size of 110 respondents was used, determined by convenience sampling. A structured questionnaire was the instrument for data collection. The study found out that entrepreneurship's risk propensity for clinical entrepreneurship has positive effects on Nigeria's economy. Scientific evidence on women clinical entrepreneurs reveal that their risk averse predisposition plays a significant role in their clinical entrepreneurship (Kedmenec, Rebernik & Perić, 2015). They examined specific personal characteristics such as the willingness to take risk for humanity using a sample size of 144 students from two graduate entrepreneurship programmes and found that the factor that differentiates the most among several other factors (creativity, pro-activity, hardship in life and moral judgement competence) was compassion or willingness to take risk for humanity. This discovery seems remarkable in view of the fact that entrepreneurship literature has over the years been littered with the impression that clinical entrepreneurship involves more rationality and less emotionalism. Zhang, Wang and Owen (2015) took this line of thinking one step further, asserting that risk propensity and the psychological well-being of students are factors that predict the likelihood of individuals to start a health care center for profit. One fascinating aspect of their findings was the failure of a predictor 'attitude towards entrepreneurship' which was theorized by Ajzen (1991) to generate a significant impact on entrepreneurial intention in contrast to several other researches.

Available literature reveal that similar studies are yet to be conducted in Jos University Teaching Hospital and Vom Christian Hospital in Plateau state using primary data and logistic regression. This is the gap that this paper has attempted to fill.

Conceptual Framework

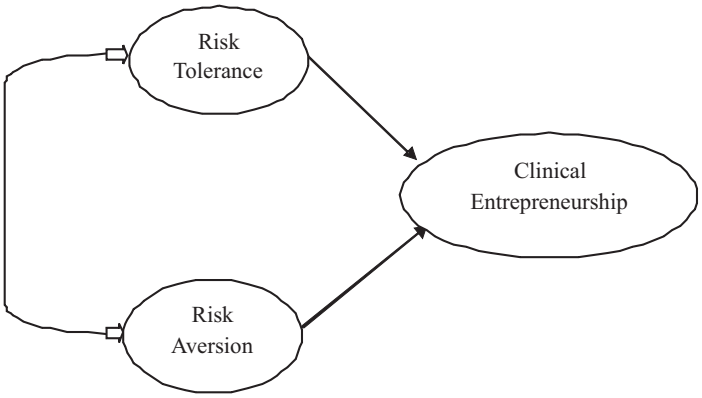

Figure 1: Link between Risk and Clinical Entrepreneurship

The guiding code of belief in this study is that the risk propensity of a clinician triggers or inclines them towards becoming entrepreneurs or becoming engaged with private practice by starting their health-care facility. In this regard, the assertion in figure 1 is that risk tolerance and risk aversion may directly and independently influence the clinical entrepreneurship of clinicians in Plateau State.

METHODOLOGY

The research design used was causal in nature as the focus of the study was to link two categories of variables (Independent and Dependent) with a view to explaining how one affects the other. A cross-sectional, sample survey field study was particularly used for gaining a representation of the reality of clinical entrepreneurship. Data for the analyses were collected from primary sources (questionnaires) only. The instrument used for this research was adapted from previous researches (Liñán, & Chen, 2009; Meertens, & Lion, 2008) and validated for the measurement of the variables in the study.

Clinical entrepreneurship: This was measured based on the entrepreneurial intention of 5 categories of health workers namely; clinical psychologists, medical doctors, clinical social workers, occupational therapists and Nurses in Jos-North and Jos-South. A five-point Likert scale, ranging from Strongly disagree (1); Disagree (2); Undecided (3); Agree (4); Strongly agree (5), which was modified from Entrepreneurship Intentions Questionnaire (EIs Questionnaire) by Liñán and Chen

(2009) was adapted for this study. Questions such as 'I intend to start a clinic since I have the acquired clinical knowledge', was preceded by other questions that sought the intentions of clinicians to start their own business at a specific time-period.

Risk Propensity: This study adapted 7 items based on a review of Meertens and Lion (2008) scales reflecting risk propensity. Items include; ' I take risk regularly before I fully understand what it is about' and ' I do not take risks with clinical cases related to entrepreneurship'. Respondents were asked to indicate the extent to which they agreed or disagreed with each statement using a 5-point likert scale ranging from Strongly disagree (1); Disagree (2); Undecided (3); Agree (4); Strongly agree (5).

The population for this study is 222 clinical practitioners drawn from two hospitals (Jos University Teaching Hospital and Vom Christian Hospital) within Jos-North and South Local Government Areas. The Krejcie and Morgan (1970) table for sample size determination (See Appendix) was used to arrive at the sample size of 191 from a total population of 222.

Table 1: Population

Clinician	Population	Sample Size
Medical Doctors	35	32
Clinical Psychologists	50	43
Occupational Therapists	2	2
Clinical Social Workers	40	36
Nurses	95	78
Total	**222**	**191**

Source: Sampled Institutions' Records, 2022

Model Specification

The functional form of the logistic regression model is stated as:

$$L_i = In\left(\frac{P_i}{1-P_i}\right) = \beta_1 + \beta_2 RT + \beta_3 RA$$

Where:

L = logit.

P_i, = probability of clinical entrepreneurship assigned as 1

(1 - P_i), = probability of no clinical entrepreneurship assigned as 0

Ln = log

RT= Risk Tolerance

RA = Risk Aversion

β_1= Intercept of the logistic model

β_2= Coefficient of Risk Tolerance

β_3= Coefficient of Risk Aversion

This study used logistic regression analysis because of its capability for predicting the likelihood of an event. It helps determine the probabilities between any two classes. Logistic regression is used when the dependent variable (target) is categorical. For example, to predict whether a clinician will venture into private practice or clinical entrepreneurship (1) or no clinical entrepreneurship (0).

DATA ANALYSIS AND INTERPRETATIONS

The value of the Cronbach alpha reliability coefficient shows the average correlation among the items of the scale. The value ranges between 0 and 1, the value of 0 indicates low reliability while 1 indicates high reliability. A value of 0.7 is generally recommended (Pallant, 2004). The result in Table 2 shows that the instrument is reliable based on the Cronbach alpha reliability test.

Table 2: Reliability Statistics

Variable	Cronbach alpha	No of Items
Clinical Entrepreneurship	0.818	9
Risk Tolerance	0.732	4
Risk Averse	0.774	3

Source: Authors' Computation, 2022

Table 3: Case Processing Summary

Unweighted Cases[a]		N	Percent
Selected Cases	- Included in Analysis	191	100
	- Missing Cases	0	0
	- Total	191	100.0
Unselected Cases		0	.0
Total		191	100.0

a = if weight is in effect, see classification table for the total number of cases.

Source: Authors' Computation, 2022

Table 3 shows the summary of sample data used for the study. The result shows that 191 out of 191 were used for analysis while none accounted for missing value. The number of independent variables for this study is 2 which meets the requirement for further analysis as there are less than 10 independent variables for this study. The violation of this requirement leads to large standard error making the logistic regression estimation method inconsistent (Sperandei, 2014).

Table 4: Dependent Variable Encoding

Original Value	Internal Value
No clinical Entrepreneurship	0
Clinical Entrepreneurship	1

Table 4 shows the logistic regression used to analyze relationships between a dichotomous dependent variable and metric or dichotomous independent variables. The variate or value produced by logistic regression is a probability value between 0.0 and 1.0.

Table 5: Omnibus Tests of Model Coefficients

		Chi-square	Df	Sig.
Step 1	Step	10.551	2	.004
	Block	10.551	2	.004
	Model	10.551	2	.004

Table 5 shows the result for the test of model fit. For this study, goodness-of-fit statistics help you to determine whether the model adequately describes the data. The Hosmer-Lemeshow statistic indicates a poor fit if the significance value is more than 0.05. Here, the model adequately fits the data, because the P-value is less than the level of significance of 0.05.

Table 6: Model Summary

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	51.569[a]	.098	.215

Table 6 shows the coefficient of determination, R^2. The Cox and Snell R^2 and Negelkerke R^2 are used to determine the variation of the dependent variable as a result of the changes in the independent variables. Here it is indicating that 9.8% and 21.5% of the variation in the dependent variable is explained by the independent variable in logistic model.

Table 7: Variables in the Equation

		B	S.E.	Wald	df	Sig.	Exp(B)
Step 1[a]	RT	1.131	.315	8.232	1	.004	3.130
	RA	.218	.306	.632	1	.231	1.374
	Constant	-3.222	1.877	2.534	1	.101	.039

a. Variable(s) entered on step 1: RT, RA.

From table 7, the result of the logistic regression for risk tolerance (RT) shows a positive relationship with clinical entrepreneurship. The result points out that risk tolerance brings about clinical entrepreneurship. It discloses that RT is more likely to prompt clinical entrepreneurship 3.130 times among clinical students.

The effect shows a significant relationship as the p-value (0.004) which is less than the significance level of 0.05. Therefore, the null hypothesis is rejected, as there are no enough reasons to uphold it while the alternate is accepted and conclude that risk tolerance significantly influences clinical entrepreneurship among clinical students.

The result of the logistic regression for risk aversion (RA) on the clinical entrepreneurship in Plateau State revealed that the coefficient of the variable risk aversion had a positive relationship with clinical entrepreneurship. The result revealed that risk aversion generates the urge to engage in clinical entrepreneurship. It shows that there is 1.374 chance of risk aversion influencing clinical entrepreneurship among clinicians. However, the effect shows an insignificant relationship as the p-value (0.231) is greater than the acceptable significance level of 0.05. Therefore, the null hypothesis is upheld while the alternate is rejected with the

conclusion that risk aversion does not significantly influence clinical entrepreneurship.

Discussion of Findings

The first hypothesis indicated the null hypothesis is rejected, as there were not enough reasons to uphold it while the alternate accepted with the conclusion that risk tolerance (RT) significantly influences clinical entrepreneurship among clinical students. The result is consistent with Knight's (1921) position over a century ago that risk tolerant individuals are more likely to engage in entrepreneurship. In a thought-provoking analysis, Yi, Chu and Png (2022) suggested that early exposure to hardship could create the kind of risk tolerance that motivates clinicians to venture into entrepreneurship. In a related line of research, Faajir (2019) as well as Hvide and Panos (2014) arrived at the conclusion that more risk tolerant individuals are more inclined to start-up an entrepreneurship endeavour.

Contrary to the conclusion of the first hypothesis, the second hypothesis had no enough reasons to reject the null hypothesis. The study therefore concludes that risk aversion does not significantly influence clinical entrepreneurship. In contradistinction to above conclusion, Cramer, Hartog, Jonker and Van Praag (2002) affirmed that clinicians with risk aversion are not less entrepreneurial. Similar findings have also been observed in the work of Cressy (2000) where he opined that one's wealth does not have any effect on business start-up once the degree of risk aversion is accounted. Such bold assertions could be counterproductive and need to be qualified carefully since the scientific evidence on the projective measures of both Cressy (2000) and Cramer et. al. (2002) seem quite pessimistic. However, Cressy (2000) admitted that the data on risk aversion was inadequate for his conclusion and that if scrutinized carefully may produce a different result. The conclusion of Cramer et. al. (2002), on the other hand, indicated risk aversion long after the occupational choice had been made thus, they were not able to handle the problem of variation in risk attitude. Daoud, Sarsour, Shanti, and Kamal (2020) came to the same conclusion but worded it differently. They asserted that the fear of failure (the opposite of risk tolerance) negatively affects clinical entrepreneurship.

CONCLUSION AND RECOMMENDATIONS

The practice of clinical entrepreneurship has not received the needed attention it deserves in Plateau State and Nigeria in general. Only a few health personnel find private practice attractive for several reasons. One possible reason is the risk

propensity of health care workers which seems to have received very limited research attention. This study used a predictive approach on a sample of student clinicians to determine the influence of risk aversion and tolerance on clinical entrepreneurship.

The study concluded that risk tolerance significantly influences clinical entrepreneurship. However, risk aversion was found to have no significant influence on clinical entrepreneurship. Thus, the study recommends that healthcare education should integrate entrepreneurship courses into their curriculum with a view to enhancing the risk tolerance of prospective clinicians. Secondly, this study recommends that risk averse individuals should be empowered by the government through initiatives that help develop their clinical practice in public settings. This will reduce the brain drain that has been prevalent in the health sector in Plateau state and Nigeria at large.

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APPENDIX
Questionnaire

	CLINICAL ENTREPRENEURSHIP					
CE1	I intend to start a clinic since I have the acquired clinical knowledge					
CE2	I see myself starting my private practice in the nearest future					
CE3	I cannot imagine myself starting a clinic in the next 3 months					
CE4	I project that my clinical entrepreneurship start-up will commence after graduation from University					
CE5	I view working for a paid salary in any health facility as a boring career					
CE6	The start-up of a clinic is one of my longings					
CE7	I intend to start my private clinic in the next 6 months					
CE8	I intend to start my private clinic in the next 12 months					
CE9	I intend to start my business in the next 2 years					
	RISK PROPENSITY Risk Aversion (RA) Risk Tolerance (RT)					
RA1	Regarding clinical entrepreneurship, I consider safety first					
RA2	I do not take risks with clinical cases related to entrepreneurship					
RA3	I prefer to avoid risks					
RT1	I take risk regularly before I fully understand what it is about					
RT2	I move on perceived opportunities not knowing what is going to happen to my business					
RT3	I usually view risk as a challenge					
RT4	I view myself as a risk taker					

Sample Size Determination Using Krejcie and Morgan Table

Table for Determining Sample Size for a Finite Population

N	*S*	*N*	*S*	*N*	*S*
10	10	220	140	1200	291
15	14	230	144	1300	297
20	19	240	148	1400	302
25	24	250	152	1500	306
30	28	260	155	1600	310
35	32	270	159	1700	313
40	36	280	162	1800	317
45	40	290	165	1900	320
50	44	300	169	2000	322
55	48	320	175	2200	327
60	52	340	181	2400	331
65	56	360	186	2600	335
70	59	380	191	2800	338
75	63	400	196	3000	341
80	66	420	201	3500	346
85	70	440	205	4000	351
90	73	460	210	4500	354
95	76	480	214	5000	357
100	80	500	217	6000	361
110	86	550	226	7000	364
120	92	600	234	8000	367
130	97	650	242	9000	368
140	103	700	248	10000	370
150	108	750	254	15000	375
160	113	800	260	20000	377
170	118	850	265	30000	379
180	123	900	269	40000	380
190	127	950	274	50000	381
200	132	1000	278	75000	382
210	136	1100	285	1000000	384

Note.—*N* is population size. *S* is sample size.

Source: Krejcie & Morgan, 1970