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Student Retention Models in Online Higher Education- A Narrative Review of Models from Past Two Decades

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Abstract

Introduction: Student attrition in tertiary education has been an ongoing topic of discussion. Attrition studies in Online Higher Education (OHE) have shown that dropout rates in online programs are significantly higher as compared to traditional programs.

Method: This narrative review focuses on three different student retention and attrition models developed during the past two decades in the context of OHE. The objective is to provide researchers, educators, and policymakers with a comprehensive review, enabling them to identify recurring patterns and themes in the attrition phenomenon; and consequently, implement sustainable student retention agendas in their respective institutions. The models reviewed include Alfred Rovai's (2003) Composite Persistence Model, Park and Chois's (2009) The Revised Model of Dropouts from Distance Learning in Organization, and Choi's (2016) Conceptual Model for Adult Dropout in Online Degree Programs. Thirty articles published between 2015-2021 on the illustrated models were collected from multiple online databases such as Google Scholar, Emerald Insight, and ERIC. Further, thirteen of them that met the inclusion criteria were reviewed for this paper.

Conclusion: Studies suggested that students often drop out on account of multiple reasons such as academic abilities, physical constraints, financial assistance, peer encouragement, interactions, motivation, and academic achievements. Lastly, while there is a correlation between academic failure and student attrition, students often withdraw for a wide array of reasons aside from mere academic performance.

Keywords: student attrition; persistence; retention; dropout; online higher education.

1. INTRODUCTION

Student attrition in tertiary education has been a topic of relevance for educational practice and policy. The attrition, retention, and persistence phenomena have become more vital than ever as higher education has become progressively seen as an important precursor to success in a knowledge and technology-oriented society. Further, the use of online learning has been pervasive in higher education for nearly three decades now (Simonson et al., 2019). Although online education has been widely popular amongst learners due to reasons such as flexibility, and convenience, however a high rate of student attrition has been reported and identified as an area of concern in the literature (Lucey, 2018). The phenomena have been a common occurrence in online as well as conventional modes of education (Bawa, 2016; Dewberry & Jackson, 2018; Ilyas & Zaman, 2020). This study aims to provide a narrative review of retention, attrition, and persistence models that have been developed during the past two decades in the context of Online Higher Education (OHE). The core objective of a narrative review is to identify certain studies that describe the problem at hand (Huedo-

Medina et al., 2013). The emphasis of this study is on the problem of attrition and retention and its related models, and the corresponding studies related to them.

The following definitions of key terms have been adopted for this review.

i. Attrition- as the opposite of persistence, attrition is withdrawal from an online course (Hart, 2012).

ii. Dropout - refers to the withdrawal from an online course before completion of the program. It is a synonym of attrition (Hart, 2012).

iii. Persistence -refers to the ability to complete an online course despite the obstacles or adverse circumstances (Hart, 2012).

iv. Retention -refers to the ability of an institution to retain a student from admission to the university through graduation (Berger et al., 2012).

II. MAJOR THEORETICAL MODELS IN ONLINE HIGHER EDUCATION (OHE)

The models reviewed in this section are Alfred Rovai's (2003) Composite Persistence Model, Park and Choi's (2009) The Revised Model of Dropouts from Distance Learning in Organization, and Choi's (2016) Conceptual Model for Adult Dropout in Online Degree Programs respectively. Each of these models and corresponding studies has been discussed chronologically according to their publication dates. Furthermore, there are three main reasons for choosing these specific models:

i. Firstly, all three models focus on aspects of Online Higher Education (OHE).

ii. Secondly, the foundation of all these models was on the seminal works of Vincent Tinto's (1973, 1975) Student Integration Model and Bean and Metzner's Non-Traditional Undergraduate Student Attrition Model respectively.

iii. Lastly, all three models are closely related to each other in terms of constructs and sub-constructs as each of them is an updated or a more evolved version of the previous one.

IIa. COMPOSITE PERSISTENCE MODEL (ROVAI, 2003)

Alfred Rovai (2003) proposed a Composite Persistence Model to understand student persistence, retention, and attrition behaviours specifically in the context of online and distance learning. This model was primarily developed on the principles of Tinto's Student Integration Model (1975, 1993) and Bean and Metzner's Non-Traditional Undergraduate Student Attrition Model (1985) respectively (Stephen et al., 2020; Stone, 2015). The key focus of this framework was to understand and explore persistence decisions amongst students in online and distance learning (Rovai, 2003a, 2003b).

Rovai (2003b) pointed out that the attributes of distance education students are vastly different from that of traditional students (Marko, 2019; Narine, 2019). Hence, it was imperative to explore and fill the research gap in this regard since the existing literature focused on traditional, face-to-face, and on-campus learning. Apart from the two seminal models, Rovai's (2003) framework (FIG.1.) also corroborated the works of other scholars namely, Rowntree (1995) and Cole's (2000) study on online student skills, Workman and Stenard's (1996) study on distance learners' needs, and Grow's (1996) study on harmonizing learning and teaching styles respectively. The final model thus expounded student persistence in online and distance education. Accordingly, the four main constructs of his model included student characteristics, student skills, external factors, and internal factors respectively (Choi & Park, 2018).

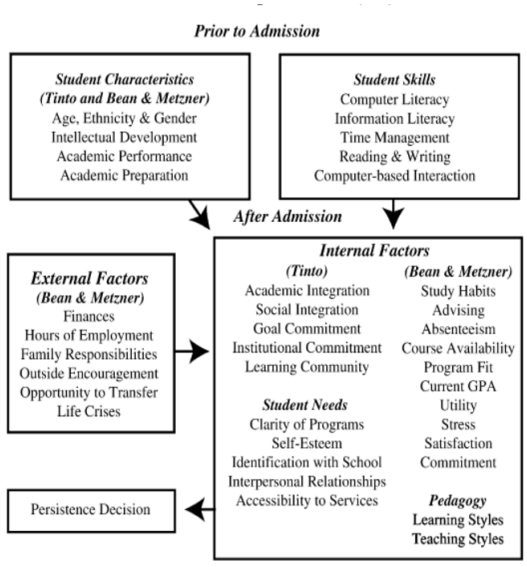

FIG.1. *Rovai's (2003) Composite Persistence Model*

Retrospectively, Rovai's (2003) model created a very clear distinction between; "prior to admission" and "after admission" factors that have the potential to influence a student's decision with regards to persistence and attrition respectively. The significant factors "prior to admission" were divided into two categories: student characteristics and student skills.

Student characteristics comprised factors like age, gender, level of intellectual development, and previous academic achievements, to name a few whereas, student skills consisted of students' level of digital literacy, time management, and communication skills, etc. Furthermore, the significant factors 'after admission' were classified into external and internal factors respectively. External factors represented elements of finances, work obligations, and family responsibilities, whereas; internal factors were a culmination of multiple constructs from theoretical models of Vincent Tinto (1975, 1993) and Bean and Metzner (1985), namely social and academic integration factors and level of institutional commitment. Other factors included consistency and clarity relating to online programs, institutional policies and procedures, e-learning systems, students' stress levels, studying and learning habits, etc. (Cochran et al., 2014; Nicoletti, 2019; Su & Waugh, 2018)

According to Rovai (2003b), while the proposed model was tailored to meet the needs of online students and understand their persistence behaviour, there is no simple solution to the problem of student attrition. Further, to fully understand these phenomena, educators, researchers, and academics must examine the whole picture, and not just certain aspects of it. As a result, students can attrit for numerous reasons, and it is not credible to attribute attrition to individual students, courses, or institutions (p.12).

Overall, this model provided valuable insights concerning persistence in online and distance education. However, Park argued that it emphasized primarily on internal factors and overlooked some crucial external factors, such as financial issues, work obligations, personal commitments, and family obligations, which heavily influence student persistence. Park (2007) therefore suggested that these constructs should be refined and studied further in the future. Lastly, despite the debates surrounding Rovai's model, prior empirical studies substantially supported its components (Choi & Kim, 2018).

IIb. THE REVISED MODEL OF DROPOUTS FROM DISTANCE LEARNING IN ORGANIZATION (PARK AND CHOI, 2009)

Initially, in 2007, Park had proposed a model that served as an update to Rovai's Composite Persistence Model (2003), and the same was then further evolved and proposed as 'The Revised Model of Dropouts from Distance Learning in Organization' by Park and Choi in 2009 (FIG.2.). According to Choi and Kim (2018, p. 2), this model was developed using a robust logic that was based on extensive evaluations of related empirical data. Furthermore, despite the literature validating Rovai's (2003) four major constructs, Park (2007) debated that the sub-constructs within the model were not empirically supported. Accordingly, one of the most significant changes made to Rovai's (2003) model was the elimination of the 'learner skills' component. The review of the literature revealed that many of the variables that Rovai (2003) included

within this category, such as computer literacy, information literacy, and time management; lacked empirical support and could not be directly associated with students' decision to drop out of online learning.

Hence, Park (2007) reasoned that 'learner skills' should not be included in a model like this until the same has been backed up by statistical data (Lucey, 2018). Furthermore, Rovai's model included 'external factors' as an 'after-admission' variable. However, Park asserted that external factors could have an impact on students at any point in time whether before or after they have begun the course (Luz et al., 2018). Lastly, Park (2007) believed 'external factors' such as personal relationships, job commitments, life crises, etc. can have a direct impact on students' attrition or persistence decisions as opposed to Rovai (2003) who believed that the nature of this impact was more indirect.

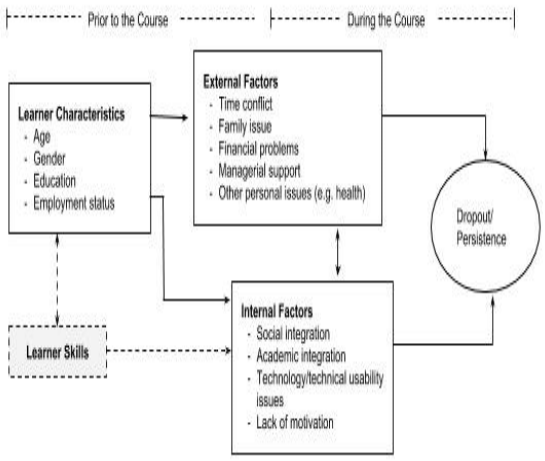

FIG.2. *The Revised Model of Dropouts from Distance from Distance Learning in Organizations (Park & Choi, 2009)*

In the final model entitled, The Revised Model of Dropouts from Distance Learning in Organizations (FIG.2.); Park and Choi (2009) stated that even though there were several conceptual models in retention and attrition literature, not many studies focused on empirically testing the impact of a particular factor. Accordingly, to test out their model, they conducted research with 147 participants who had either completed or dropped out from a program at a Midwestern university. The purpose was to identify essential factors that contributed to learners' attrition decisions.

Accordingly, in their study, they found out that there were statistically significant differences between students who dropped out and students who completed their program. Adult learners often dropped out of programs for reasons such as extreme workload, the stress of changing jobs or other external circumstances. There was a significant difference in how successful students perceived the support they received from their families and employers in juxtaposition to their counterparts who had dropped out. The levels of satisfaction and usefulness of the program also played a crucial role in determining their attrition and persistence decisions (Clark, 2020; Park & Choi, 2009). Choi and Kim (2018, p. 2) further contended that Park and Choi's (2009) model dealt specifically with non-degree online programs. Thus, it might not be very feasible to adapt it in terms of studying attrition behaviour amongst students from full-time online degree programs.

In a nutshell, Park and Choi's (2009) model demonstrated that students' background characteristics influence internal and external factors. These factors then further interact with each other thereby affecting students' drop-out and persistence decisions in online classrooms respectively.

IIc. CONCEPTUAL MODEL FOR ADULT DROPOUT IN ONLINE DEGREE PROGRAMS (CHOI, 2016)

Lastly, in most recent theoretical frameworks in the context of student attrition, Choi (2016) modified Park's (2007, 2009) original model to develop a conceptual framework for predicting student attrition in online degree programs. This was in retrospection to his argument where he had pointed out that Park and Choi's (2009) model was primarily focussed on drop-out decisions in non-degree online programs thereby rendering it as not the most ideal conceptual model for understanding learner dropout behaviour in full-time online degree programs (Choi & Kim, 2018).

Choi (2016) then restructured and retitled certain constructs from the existing model and added an outcome factor to it. In his final model (FIG.3.), he re-titled "student characteristics" to "learner factors" that included age, gender, level of education, employment status, basic scholastic aptitude, and studying motive respectively. External factors included encouragement from superiors, colleagues, family members, financial support, and physical constraints from work, family, and other personal issues.

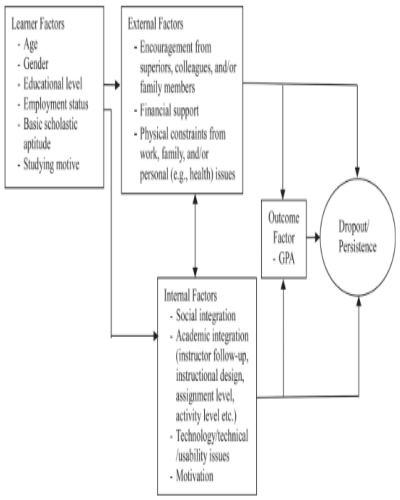

FIG.3. *Conceptual Model for Adult Dropout in Online Degree Programs (Choi, 2016)*

Choi (2016) further clarified that the sub-construct 'physical constraints' under 'external factors' in this context referred to a myriad of obstacles faced by adult students that would often hinder their degree completion process. Accordingly, these constraints included but were not limited to scheduling problems, increased workload, parenting, family responsibilities, personal sicknesses, etc. In addition, according to the existing literature, Grade Point Average (GPA) was identified as a construct that was often associated with adult students' decision to persist or dropout (Choi, 2016; Dupin-Bryant, 2004; Osborn, 2001). Accordingly, Choi (2016) added GPA as an outcome factor in his model. According to him, this construct would impact students' final decision to attrit or persist in online classrooms respectively (Choi & Kim, 2018; Choi & Park, 2018).

Choi (2016) further contended that Basic Scholastic Aptitude under 'learner factors' was a sub-construct that significantly impacted persistence and dropout decisions. He reiterated that adult students' learning skills such as metacognition and time management can be classified under this heading because scholastic aptitude scores are a measure of their overall academic achievement. To sum it up, he concluded that there was indeed a positive relationship between students' scholastic aptitude and their GPA and learner dropout decisions in online classrooms (Choi & Park, 2018, p. 132).

III. METHOD

The aforementioned models have evolved considerably during the past two decades (2003-2016). They have been deployed in more recent studies relating to attrition, persistence, and retention phenomena in the context of OHE. The inclusion and exclusion criteria for this review has been discussed below.

Articles published primarily during 2015-2021 were collected and reviewed from three major databases namely Google Scholar, Emerald Insight, and ERIC respectively. The inclusion criteria are: articles which had keywords such as student attrition, persistence, retention, dropout, and online higher education; articles that had in some way adapted or adopted the suggested frameworks in their respective studies; and the diverse methodological approaches used. The exclusion criteria are: studies which looked at traditional face-to-face learning and articles published in non-English journals. Thirty articles that focussed on the aforementioned keywords were finally reviewed. However, these were further narrowed down to 13 articles that met the inclusion criteria in their entirety. Among them, 7 (54%) studies used Rovai's (2003) model, 3 (23%) studies deployed Park and Choi's (2009) model, and other 3 (23%) studies applied Choi's (2016) model respectively.

Furthermore, the studies were classified based on their methodological diversity. Accordingly, 54% of the papers reviewed deployed

quantitative methods, 31% used mixed methods whereas 15% used qualitative methods respectively. Lastly, to date, there is no standard structure for narrative reviews. The most ideal structure however is to follow the IMRAD format (Introduction, Methods, Results, Discussion) (Ferrari, 2015). The same format is used in this paper.

IV. FINDINGS AND DISCUSSIONS

Overall, the studies in this review provided a complex yet intriguing source of information. Some of the main findings shall be highlighted and discussed in this section.

Firstly, FIG.4 below demonstrates the major themes that were identified in this review.

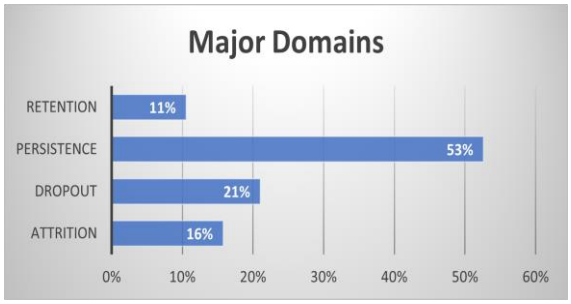

FIG.4 *Major Domains and Themes*

FIG.5 demonstrates the segregation of major constructs identified along the course of this review.

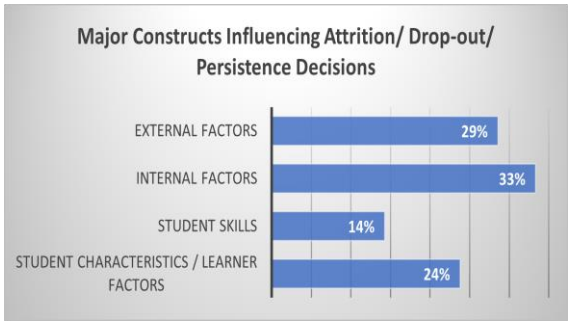

FIG.5 *Distribution of Major Constructs*

Additionally, one of the studies that had contradicting conclusions as compared to the rest (e.g. Narine, 2019) was excluded from the above graphs.

Lastly, TABLE I below presents a synthesis of all the relevant articles reviewed in this paper followed by discussions.

TABLE I. *SUMMARY OF REVIEWED ARTICLES*

Constructs	**Author, Year**	**Synthesis of Studies**
Student Characteristics/ Learner Characteristics/ Learner Factors	Choi & Park (2018), Choi & Kim (2018), Folk (2019), Knight (2019), Narine (2019), Stephen et al. (2020).	*Student Characteristics* was identified as a significant predictor of persistence in all studies except Narine (2019) who observed that 'employment status' of students which is a sub-construct under this heading, is not a significant predictor of persistence.
Student Skills	Su & Waugh (2018), Folk(2019), Stephen et al. (2020)	There was a common consensus that '*student skills'* is a good predictor of persistence among online learners.
Internal Factors	Stone (2015), Su & Waugh (2018), Luz et al. (2018), Choi & Kim (2018), Laato et al. (2019), Aydin et al. (2019), Choi (2021).	*Internal factors* such as a sense of belonging, institutional support, technological problems, course relevance, exam scores, satisfaction, interaction have an influence on persistence and attrition decisions.
External Factors	Alperin (2015),	*External factors* such as support from place of

	Su & Waugh (2018), Luz et al. (2018), Choi & Park (2018), Choi & Kim (2018), Aydin et al. (2019), Narine (2019).	employment, financial factors, schedule conflicts, family, and personal commitments greatly influence drop-out and persistence decisions. Narine (2019) however observed that 'marital status' of students which is a sub-construct under this heading is not a significant predictor of student persistence.

IVa. STUDENT CHARACTERISTICS

Rovai (2003) recommended that to identify academically at-risk students, factors such as students' previous academic performance, high school GPA should be explored. This will enable institutions to identify such students early on and take measures to improve retention. Hence, attention should be given to pre-admission GPA requirements and other prerequisite criteria that have significant effect on student retention and persistence (Folk, 2019; Knight, 2019).

IVb. STUDENT SKILLS

Skills such as computer literacy, time management, reading, writing, communication, and technological skills also influenced attrition decisions in online classrooms (Folk, 2019; Rovai, 2003b, 2003a; Stephen et al., 2020; Su & Waugh, 2018).

IVc. INTERNAL FACTORS

Among other factors, interaction with peers, faculty, and institution was identified as a key theme that could impact persistence and dropout decisions amongst online learners (Stone, 2015). However, contradicting observations were made in another study where it was discovered that 'learner-instructor interaction' had a significant but negative effect on student persistence (Choi & Kim, 2018). In other words, students who had frequent 'learner-instructor interaction' were more likely to drop out because in many cases, it was observed that cyber-university instructors failed to provide students with timely feedback for improvement (p. 10).

IVd. EXTERNAL FACTORS

Park and Choi (2009) stated that students who have strong support from their families, peers or organizations are more likely to persist and graduate. The same was affirmed in multiple studies (Kintu et al., 2017; Laato et al., 2019; Luz et al., 2018). Furthermore, employment-related reasons, difficulties in maintaining the work-life balance, and changes in financial arrangements were cited by Alperin (2015, p. 131) as factors influencing dropout behaviour among students.

IVe. GRADE POINT AVERAGE (GPA)

Lastly, in reference to Choi's (2016) model, certain studies in this review emphasised on the significance of GPA. It was concluded that learner factors, internal, and external factors interact with each other and collectively impact GPA which consequently influences students' decision to drop out or persist respectively (Choi & Kim, 2018; Choi & Park, 2018; Choi, 2021).

V. CONCLUSIONS AND RECOMMENDATIONS

In conclusion, the literature review surmises that adult students drop out for various reasons such as academic capabilities, physical constraints, financial reasons, peer encouragement, interactions, and motivation, among others (Choi & Park, 2018; Park & Choi, 2009; Rovai, 2003b). At the end of the day, student attrition, persistence, and retention continue to be complex phenomena with multiple layers to explore and comprehend. Beer and Lawson (2018) even referred to the attrition phenomenon as 'wicked' since it's not a problem with a single solution; but a symptom of a complex network of interconnected problems, many of which are beyond an institution's control.

Further, the factors involved in student withdrawal is not a straightforward process either. Students may withdraw based on their own educational goals and academic capabilities. Based on each scenario, although the action of dropping out might be the same, the underlying motivations could be contrastive (Aljohani, 2016). Similar suggestions were provided by Choi & Kim (2018) and Rovai (2003b), whereby they recommended that it shall be imperative to consider individual differences in these scenarios. Lastly, Ryan and Greig (2017) added to the list of refreshing perspectives stating that not every student leaves or drops out because of academic struggles. Although there is a correlation between subject failure and student attrition, sstudents often withdraw for a wide array of reasons aside from mere academic performance.

Hence, studies should be conducted in the future to provide substantial empirical evidence concerning the effectiveness and efficacy of these models. Furthermore, additional research could help identify themes and patterns related to student attrition and persistence behaviours. Most importantly, studies of such theoretical and practical significance can assist educational institutions, policymakers, educators, and researchers globally to formulate sustainable strategies to retain students.

VI. LIMITATIONS

Due to factors such as database selection, time constraints, and excluding studies that were not in English, some relevant studies may have not been included in the review. Furthermore, owing to the nature of narrative reviews, a broader perspective on the subject matter was given precedence over an in-depth analysis.

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