
Impact of Entrepreneurial Orientation on Resilience in State Universities of Sri Lanka: Mediating Role of Innovation Culture

Dilroshan T.L.C.^{a*}, Herath H.M.T.S.^b, Madurapperuma W.^c

^{a} Faculty of Graduate Studies, University of Kelaniya, Sri Lanka*

^b Department of Commerce & Financial Management, University of Kelaniya, Sri Lanka

^c Department of Accountancy, University of Kelaniya, Sri Lanka

A B S T R A C T

As universities are challenged like any other organization, how to manage risk, and maintain survival and growth during crises have become a concern. Lack of finance and interruption of activities by Covid 19 have created issues for Sri Lankan state universities (SLSUs) to question their resilient nature. Entrepreneurial orientation (EO) and innovation culture (IC) enhance better performance and survival of an organization ensuring organizational resilience (OR). Thus, this study is a theoretical debate on EO, OR, and IC in SLSUs. This proposed model will measure EO, OR, the impact of EO on OR, and mediating effect of IC on the relationship between EO and OR in SLSUs. The relationship among three variables: EO, OR, and IC is looked at from the dynamic capabilities theory (DCT) lens as they are confirmed as dynamic capabilities (DCs). Five-dimensional models of EO, OR, and unidimensional model of IC are adopted. Four hypotheses were formulated after referring to extant literature to be tested empirically. The stratified random sampling technique is used for selecting the sample from five strata. All three variables will be operationalized. Survey technique to be applied to collect data. Answers to the structured questionnaire are to be measured on five (5) point Likert scale. Reliability of data and construct validity to be tested. The relationships between variables to be assessed while mediating effect of IC on the relationship between EO and OR to be tested. This proposed study contributes to DCs, EO, IC, and OR literature. Practical implications of this study too are discussed.

Keywords: Dynamic capabilities, Entrepreneurial orientation, Innovation culture, Organizational resilience, State universities

* Corresponding author: dilroshan@yahoo.com

1. Introduction

In the modern world globalization, internationalization, and uncertainties seem to have made crises regular events in organizations (Ouedraogo & Boyer, 2012). These events create growing challenges for the survival and development of organizations. Therefore, how companies manage risk and remain to grow during crises has become a major concern for decision-makers. How some organizations are better able to handle unfavorable environmental conditions and stay alive in the face of crises, and what kinds of processes lead to the implementation of novel procedures are explained well by organizational resilience (OR) (Blanco & Sustains, 2018). The empirical and theoretical research (Granig & Hilgarter, 2020; Chen et al., 2021) demonstrate that OR is the most direct component explaining why companies can successfully overcome crises because highly resilient companies have strong OR. Like any other type of organization, challenges are evident for universities that force them to transform themselves fully, with appropriate changes in relation to their mission, approaches, structure, and even culture (Audrestsch & Phillips, 2007). Teece (2018) describes that a university itself is a complex system and thus, university administrators must learn to think like entrepreneurial business managers and exercise dynamic capabilities (DCs). Although generally entrepreneurship and entrepreneurial orientation (EO) are concepts related to business environments, several scholars (Covin & Slevin, 1991; Miller and Friesen, 1984; Taucean et al., 2018) confirm their relevance to higher educational institutions (HEIs) and universities to enhance better performance, and survival avoiding collapse during challenging times (Vogus & Sutcliffe, 2007). In contrast to traditional routines, and processes, nowadays universities must encourage a culture associated with innovativeness as Silver et al. (2016) say innovation is essential for the long-term growth and survival of an organization, and it plays a crucial role in their future too. Meanwhile, Hayashi et al. (2020) describe that responding to COVID-19 provided opportunities for Sri Lanka's tertiary education system including state universities to become more resilient against unforeseen future challenges as they were not resilient enough. Similarly, entrepreneurship and EO of Sri Lankan state universities (SLSUs) turn out to be a research attention of several scholars (Perera & Senarath, 2016; Fernando, 2016) in the recent past. Samarasinghe et al., (2020) explain that few SLSUs by redesigning their systems facilitate and promote EO. As OR is the answer to challenging conditions faced by universities like any other organization, and as it is suggested for universities to see from the entrepreneurial point of view, exercise dynamic capabilities, and SLSUs have paid attention towards EO, this research looks at the relationship among EO, OR, and innovation culture (IC) from the DCs perspective in proposing a substantial conceptual model.

1.2. Statement of the problem

Managing a university is certainly more complex than managing a private for-profit company (Teece, 2018). However, universities are committed to play an important role similar to any other public organization, in creating and disseminating knowledge through teaching and research while contributing actively in various ways to national development. Further, universities are supposed to produce quality graduates for the job market who would directly contribute to economic development. SLSUs which mainly depend on General Treasury funding for undergraduate education are getting limited finance during the last few decades due to the continued budget deficit of the government (Fernando, 2016) and the government has allocated less than 3% of the GDP for education in last several years (Central Bank of Sri Lanka, 2015-2020). One of the main constraints being faced by SLSUs is lack of finance and this situation negatively affects the performance of the students and universities as a whole (Fernando, 2016). This reveals that SLSUs are struggling for survival and success. Further, the

closure of SLSUs from March 2020 due to the COVID – 19 pandemic reveals several issues and challenges affecting their performance. 74% of students and 60% of faculty members who participated in the survey are worried about the negative impact of COVID-19 (Hayashi et al., 2020). Half of the faculty members in HEIs are not accustomed to online education and 76% of them have not received training on online assessment (Hayashi et al., 2020). There are numerous challenges that SLSUs face due to a lack of resilience (Hayashi et al., 2020). Those challenges can be identified as follows. Poor internet connection (70% of students, 68% of faculty face issues during online teaching and learning), lack of devices (31% of faculty are not provided with necessary devices by the university, while 59% of students face difficulties in acquiring a hardware device), lack of online curriculums, pedagogy, and assessment for blended learning (providing online education using offline curriculums is not sustainable), relatively low participation in online learning (70% and 75% of student participation from two state universities in Western province), and lack of opportunities for social cohesion (no room for social interactions, teamwork, personality development, taking part in extracurricular activities) (Hayashi et al., 2020).

Improving access to quality tertiary education, one of the Sri Lankan government's highest priorities in its efforts to realize a knowledge-based economy under Vistas of Prosperity and Splendour, the government's new economic framework (Ministry of Finance, 2020), and creation of leaders and skilled workforce the country needs to successfully transit to upper-middle-income status (Hayashi, 2020) are in danger under above explained challenges. Thus, it is required to identify the ways to harness OR. Research studies (Coleman & Adim, 2019) prove that EO plays a significant role in improving firm resilience. However, while some studies have found a positive association between EO and OR (Kim & Ahn, 2020; Lita et al., 2020), others have found a negative association (Dimitratos et al., 2004; George et al., 2001). These inconsistencies in prior research findings demand further research on the EO-OR relationship concentrating on possible mediating and/or moderating factors in order to identify the mechanism underlying this relationship and the direct and/or indirect effects of EO on OR. Even though, several studies (Hanifah et al., 2019; Abdul-Halim et al., 2019; Koller et al., 2017) have identified IC as a factor to foster OR, its mediating effect between EO and OR is not tested. Although Conz & Magnani (2020) and Pavlou & El Sawy (2011) propose vital capabilities for resilience, research on how such capabilities can be developed seems to be scarce (Conz & Magnani, 2020). Similarly, resilience has not been studied from a capability-based approach to investigate the ability of EO to develop resilience capabilities (Zighan et al., 2021; Asyari, 2021). In spite of the advancement in the theoretical background and comprehensive conceptualization of OR (Duchek, 2020), empirical and conceptual gaps remain. Therefore, as the creation of wealth and dynamism of a country depends upon the EO of its firms (Tobora, 2015), and as organizations worldwide strive to leverage resilience to respond to sudden unexpected shocks (Ruel & El Baz, 2021), how EO improves resilience in departments of SLSUs directly and indirectly through IC needs to be empirically investigated as it is a puzzling situation to be answered with existing knowledge.

1.3. Research questions

This research while investigating the above-mentioned problem in departments of SLSUs tries to answer the following questions.

RQ1: What is the relationship between EO and OR in SLSUs?

RQ2: What is the relationship between EO and IC in SLSUs?

RQ3: What is the relationship between IC and OR in SLSUs?

RQ4: To what extent does the IC mediate the relationship between EO and OR in SLSUs, if any?

2. Literature Review

2.1. Research gaps

Research gaps identified via literature review are categorized into three: (i) theoretical gap (ii) literature/empirical gap and (iii) practice gap.

2.1.1. Theoretical gap

Wang & Ahmed (2007) after reviewing the key empirical studies related to dynamic capabilities theory (main underpinning theory of this study) from 1995 to 2005 mention that quantitative studies on dynamic capabilities are still underdeveloped. Chiu, Wen-Hong, et al. (2016) explain that the relationships among types of dynamic capabilities themselves are still unknown. As this empirical study is conducted on the relationship among three types of dynamic capabilities: EO, OR, and IC which are identified in prior literature as DCs, it will produce new knowledge on the relationship among three types of DCs and fill the above-mentioned gaps.

2.1.2. Literature/Empirical gap

Although many studies on OR and innovation have been conducted in the private sector, they seem to be the least researched in the public sector (Clausen et al., 2020; Mafabi et al., 2015). Similarly, EO has received very little attention in the organizational context and in service sectors (Todorovic et al., 2011; Zhang et al., 2014). Existing empirical studies have analyzed DCs mainly in the manufacturing sector and research is rare in the public sector (Nieves et al., 2016), while empirical studies in a quantitative approach are still needed to provide more academic rigor to DCs (Samarasinghe, 2014). Further, Todorovic et al., (2011) emphasized the need for research on EO in universities in disciplines other than Computer Science, Health Sciences, & Engineering & in different countries with different governance structures, mandates, or funding levels and research in relation to outcomes other than commercialization outcomes. Likewise, Duchek (2020) was of the view that little information is available on determinants of resilience and resilience in organizational and management studies. This empirical study with EO as the independent variable, OR as the dependent variable, and IC as mediating variable conducted in departments of SLSUs with a different governance structure and a different funding level, in relation to resilience outcomes, will fill the above gaps by adding (i) new knowledge to the empirical literature, and (ii) academic rigor to quantitative research on DCs.

2.1.3. Practice gap

Fernando (2016) says that one of the main constraints being faced by state universities is a lack of financial resources and this situation has affected the performance of SLSUs. Meanwhile, a comprehensive research study conducted by Hayashi et al., (2020) reveals the challenges and issues in teaching, learning, assessment, social cohesion, etc. created by COVID 19 for state universities due to their resilient nature and how differently administration, staff, and students face the sudden unexpected situation. Hayashi et al., (2020) describe that this prevailing environment has disturbed 'improving access to quality tertiary education' which is one of the Sri Lankan government's highest priorities in its efforts to realize a 'knowledge-based economy' under 'Vistas of Prosperity and Splendour', government's new economic framework (Ministry of Finance, 2020) and creation of the leaders and skilled workforce the country needs to successfully transition to upper-middle-income status (Hayashi et al., 2020). Thus, it is important to understand the emerging issues and challenges in SLSUs as mentioned above and

pay attention to find solutions for this practical problem through research built on the following conceptual model.

2.2. Dynamic capabilities

The resource-based view (RBV) theory defines the firm as a bundle of resources and capabilities persistent over time, but heterogeneous between firms (Ambrosini et al., 2009). Thus, firms possessing rare, inimitable, and non-substitutable resources and capabilities can implement value creation strategies that lead to sustainable competitive advantages (Barney, 1991). However, the possession of such resources and capabilities does not guarantee value creation and the development of competitive advantages. Thus, DCs are needed to combine, develop, and exploit those resources (Fernandes et al., 2017). DCs arise as an extension of the RBV theory (Chen & Jaw, 2009). Capabilities are categorized as ordinary capabilities (OCs) and dynamic capabilities (DCs). “To a large extent, OCs are operational (doing things right), whereas DCs are generally strategic in nature (doing the right things)” (Teece, 2017, p. 696). While OCs focus on performing necessary daily activities to provide services, DCs focus on picking the services to match the changing environment (Pavlou & El Sawy, 2011). Therefore, DCs are liable for identifying the right momentum and tendency of opportunities and are responsible for changes, encouraging innovation (Haarhaus & Liening, 2020). The definition of DCs can be divided into two groups: the first group with ‘rapidly changing environments’ to drive, renew or develop firm resources and capabilities (Teece et al., 1997; Wang and Ahmed, 2007), and the second group exclude rapidly changing environments (Zollo & Winter, 2002). “Dynamic capabilities are a set of strategic activities that aim to empower companies to adapt, integrate, and reconfigure internal and external organization skills, resources, and functional competencies to match the requirements of a changing environment” (Teece et al., 1997, p. 515). Although there are several definitions with slight differences, for the purpose of this research, the definition of Teece et al., (1997) in the group with ‘rapidly changing environments’ is selected as it is closely related to this study to investigate the resilience of state universities amidst rapidly changing environments.

Research scholars have identified that it is very difficult to operationalize DCs and thus have tested the existence of DCs through the existence of other characteristics, as DCs are manifested in other characteristics such as entrepreneurship, leadership, market orientation, etc. of a firm in a more tacit manner (Arend & Bromiley, 2009). Several research scholars (Chiu, Wen-Hong et al., 2016; Frishammar & Ake Horte, 2007; Duchek et al., 2020; Chen et al., 2021; Rodrigues & Gohr, 2021; Kocak et al., 2017) have offered insights and evidence on how firms develop their DCs within EO, OR, and IC characteristics to better cope with rapidly changing environments. For example, Chen et al. (2021) have found that scholars with a dynamic view advocate exploring OR from a capability perspective. Duchek et al., (2020) have discussed three main capabilities of OR. (i) Anticipating capabilities which are related to proactiveness and risk-taking dimensions of EO, (ii) coping capabilities which are related to autonomy and innovativeness dimensions of EO, and to innovation dimension of IC, and (iii) adaptation capabilities which are related to risk management and innovativeness. Thus, the three variables, EO (independent), OR (dependent), and IC (mediating), of this study are identified as DCs in extant literature in relevant subject areas. As dynamic capabilities theory (DCT) provides a convincing framework for analyzing the impact of strategic actions on the performance of the organization (Teece, 2009) and as this study analyzes the impact of EO and IC on OR through strategic actions of their dimensions, it is appropriate to build this study on the DCT or look at the relationships of three variables from the dynamic capabilities’ lens.

2.3. Entrepreneurial orientation

Entrepreneurial orientation (EO) research started with the work of Mintzberg (1973) and has received much attention in the literature, coinciding with the growth of entrepreneurship as a field of study. Entrepreneurship studies at the organizational level by Miller (1983) led to the development of the concept of EO. Lumpkin & Dess (1996) are of the view that the organizations that seek successful organizational entrepreneurship must have proper EO. EO is different from entrepreneurship. Entrepreneurship refers to the creation of a new business and it emphasizes 'what business should we get into?' On the other hand, EO stresses the process and explains 'what we need to do in the process' (Shirokova et al., 2016). "EO is the set of organizational processes, methods, and styles that firms use to act entrepreneurially" (Chakrabarti & Mondal, 2018, p. 76). EO refers to organizational-level processes, practices, decision-making styles (Lumpkin & Dess, 1996), and strategic orientations (Wiklund & Shepherd, 2005) that help an organization gain competitive advantage and display excellent performance.

There is an argument on the dimensionality of EO as there are two prominent types of EO constructs. One is Miller's (1983) unidimensional construct, and the other is the multidimensional construct suggested by Lumpkin & Dess (1996). Generally, the EO construct can be measured collectively (Runyan et al., 2008) or separately (Lumpkin & Dess, 1996, 2001), depending on the context. Miller's model later developed by Covin & Slevin (1989) analyses EO from a unidimensional conception, that the three dimensions (innovativeness, risk-taking, and proactiveness) are combined together to give higher indicator values of EO. Therefore, Miller's model considers EO as a formative construct. In addition to the three dimensions presented by Miller (1983), Lumpkin & Dess (1996) presented two more dimensions: autonomy and competitive aggressiveness. Lumpkin–Dess's model adopts multiple dimensional approaches proposing that dimensions of EO (innovativeness, risk-taking, proactiveness, autonomy, and competitive aggressiveness) can vary independently from each other. Therefore, Lumpkin–Dess approach considers EO as a reflective construct. Sanchez-Barriloungo & Benneworth (2019) are of the view that the entrepreneurial strategies derived mainly in company environments are now becoming part of the educational strategies of the universities. Thus, this study identifies several scholars (Todorovic et al., 2011; Cvijic et al., 2019; Perera & Senarath, 2016; Fernando, 2016; Samarasinghe et al., 2020) who conduct research on EO in universities. Although different conceptualizations of EO have been made by various researchers in recent years, the five-dimensional model of Lumpkin and Dess is one of the most complete, comprehensive, and well-known orientation models (Doulani et al., 2020). Therefore, this study adopts the five dimensions Lumpkin–Dess's reflective model.

2.4. Organizational resilience

Unexpected events such as financial crises, terrorist attacks, tsunamis, viruses, and pandemics impose increasing challenges to the survival and development of organizations. During turbulent times, many organizations unavoidably collapse. Others emerge relatively unharmed, and some may even perform better than ever. Yet how do some organizations strive despite adversity, while others perish? Organization scholars have referred to this so-called 'maintenance of positive adjustment under challenging conditions' as 'resilience' (Vogus & Sutcliffe, 2007). Research on OR has grown vastly with the beginning of the 21st century showing 98 results from 1985 to 2000 and 3270 results from 2001 to 2015 in Google Scholar search (Duchek, 2020).

Duchek (2020) made the most recent conceptualization of OR and categorized resilience into three stages: (1) anticipation, (2) coping, and (3) adaptation. Organizations observe and identify threats and prepare for potential adversity during anticipation. In the coping stage, organizations accept the situation and start developing and implementing solutions. After the event, they reflect on and learn from the experience. Similarly, Chen et al. (2021) describe that OR comprises three main vital elements: (i) organization functions in a dynamic environment, (ii) organization reacts to the crisis by reconfiguring organizational resources, reshaping organizational relationships, and optimizing organizational processes in a hostile situation, (iii) organization obtains recovery and attains growth. Therefore, Chen et al. (2021) regard OR as “the ability of an organization to reconfigure organizational resources, optimize organizational processes, reshape organizational relationships in a crisis, recover quickly from the crisis, and use the crisis to achieve counter-trend growth. Chen et al., (2021) after reviewing the literature on OR for the past thirty years identify five dimensions of organizational resilience: capital resilience, strategic resilience, cultural resilience, relationship resilience, and learning resilience. Abdullah et al. (2020) based on their research formulate a Higher Education Resilience Index to assist Malaysian universities come out of the impact of the Covid 19 pandemic. This study finds that several researchers (Ahiauzu & Eketu, 2015; Abdullah et al., 2020; Olaleye et al., 2020) conduct studies on OR in universities. Extant literature interprets OR from the capability perspective, process perspective, functional perspective, and outcome perspective (Chen et al., 2021). Scholars adopting the capability perspective deem organizational resilience as a dynamic and flexible organizational capability (Duchek et al., 2020). This study looks at OR from the dynamic capability perspective, and takes the dimensions and definition of Chen et al. (2021).

2.5. Innovation culture

Innovation is known as a vital factor for improving organizational performance (Pohle & Chapman, 2006) and a driver of competitive advantage (Aziz & Samad, 2016). It is essential for the long-term growth and survival of an organization, and it plays a crucial role in its future too (Silver et al., 2016). Innovation is considered as a seed that needs the cultivated land of IC (Hanifah et al., 2020), and innovation performance is indeed culture-specific (Piana et al., 2015). An organization can be regarded as innovative and is defined by its culture (Dobni, 2008). “Innovation culture refers to the shared common values, beliefs, and assumptions of organizational members that could facilitate the innovation process” (Hofstede, 1980). Extant literature discusses a uni-dimensional view of IC and the multi-dimensional context of it. The multi-dimensional approach indicates that innovativeness may result from several inter-related activities held together by a common thread – that being culture (Dobni, 2008). Al-Khatib et al. (2021) recognize IC as a uni-dimensional variable and conduct research in 24 Jordanian private universities to find out the effect of organizational culture by its two perspectives (conservative organizational culture and innovative organizational culture) on innovative performance. The findings reveal that the innovative organisational culture improves innovative performance and indicates the importance of IC for innovative performance at universities in particular and in other organizations in general. Al-Khatib et al., (2021) identify IC as a culture that adopts innovation and they use the definition of Michaelis et al. (2018) who define the IC as the values, beliefs, assumptions, and symbols in a project that facilitate activities, including innovating new products or services. Therefore, this study takes the definition of Michaelis et al., (2018) and the unidimensional view on IC of Al-Khatib et al., (2021).

2.6. Theoretical framework

2.6.1. EO and OR

There is a positive relationship between EO and OR. Williams et al., (2017) and Eshegheri & Korgba (2017) find a correlation between innovativeness (dimension of EO) and OR as innovativeness is strongly and significantly associated with OR. Therefore, they conclude that innovative activities should be encouraged in order to enhance the resilient stance of the organization. Similarly et al., (2003), ; Mafabi et al., (2015) reveal a strong, positive, and significant relationship between innovativeness and OR. Eshegheri & Korgba (2017), and Coleman (2019) affirm a significant relationship between pro-activeness (dimension of EO) and OR as proactiveness is observed to significantly impact OR positively. Louisot (2015) is of the view that with the new paradigm over resilience, some professionals envision risk management as a part of resilience management. Apart from these, Kim & Ahn (2020), and Prima Lita et al., (2020) in their empirical research identify EO as a component to foster OR. However, some scholars like Soomro & Shah (2019) state that EO has a non-significant impact on employee performance. Thus, it seems that there are mixed findings. Therefore, the following hypothesis is formulated.

H₁: EO positively and significantly influence OR.

2.6.2. EO and IC

Despite the difference between the concepts of innovation and innovativeness (dimension of EO), there is a certain level of overlap between them (Damanpour, 1991). Innovativeness stems from initiation stage of the innovation process (Hurley & Hult, 1998) and it represents the first stage of the innovation process (Lumpkin & Dess, 1996). Many empirical studies have examined the relationship of innovativeness with innovation (Adam et al., 2017; Kollmann & Stockmann, 2012). Further, Hanifah et al.,(2017) in their empirical studies find a positive relationship between IC and autonomy (dimension of EO) while Puranam et al., (2006) find evidence to say that autonomy helps the emergence of IC. Isaksen & Ekvall (2010) confirm that there is a significant relationship between organizational IC and risk-taking (dimension of EO). Al-Khatib et al., (2021) in their study found a positive, statistically significant relationship between IC and innovativeness (dimension of EO). Meanwhile, a number of researchers (Miller, 1983; Wiklund & Shepherd, 2003; Hafeez et al., 2012) in their research stress a positive relationship between EO and innovation. Based on these the following hypothesis is proposed.

H₂: EO positively and significantly influence IC.

2.6.3. IC & OR

IC of organizations improves their resilience nature. Strobl et al., (2019) establish that innovation should be considered as a component that improves OR. Hanifah et al., (2019) and Abdul-Halim et al. (2019) affirm IC as one component among several others to foster OR. The findings of the study by Koller et al., (2017) show that 88% of the studied resilient firms have IC and thus they conclude that IC helps companies to be more resilient. Mafabi et al., (2015) reveal that innovation partially mediates the effect of creative climate on OR. A study conducted by Olaleye et al., (2020) reveals that innovation significantly and positively influences resilience in universities. Therefore, it is hypothesized that:

H₃: IC positively and significantly influences OR.

2.6.4. Mediating role of IC

Interestingly, Lita et al., (2020) based on their analyses confirmed that innovation neither has a significant influence on organizational performance nor mediates the influence of entrepreneurial orientation on organizational performance. However, IC functions as a strong mediating variable for relationships between a number of organizational characteristics.

Several scholars confirm it. For example, Hanifah et al., (2020) identify that specific human capital and social capital are important aids through IC to achieve innovation performance. Arsawan et al., (2020) verify that IC partially mediates the relationship between knowledge sharing and sustainable competitive advantage. Similarly, Alosani et al., (2021) in their study found the mediating role of IC on the relationship between Six Sigma and organizational performance. Further, Ashraf et al. (2014) and Mafabi et al., (2015) witness the mediating role played by IC. Therefore, this convincing mediation of IC supports this study to take it as a mediating variable.

Baron & Kenny (1986) state that if the predictor variable accounts for a certain variance in the mediator variable, which is also supposed to account for the variance in the criterion variable, then mediation is deemed to occur. In other words, the mediator variable converts the effect of the predictor variable onto the criterion variable. As extant literature (Puranam et al., 2006; Strobl et al., 2019; Hanifah et al., 2019) confirms EO (predictor variable) accounts for certain variance in IC (mediator variable) and IC accounts for the variance in OR (criterion variable), the following hypothesis is established.

H4: IC mediates the relationship between EO and OR.

Based on the above discussion, this study makes an attempt to discover the mediating role of IC between EO and OR in the context of SLSUs. Figure 1 illustrates the conceptual model.

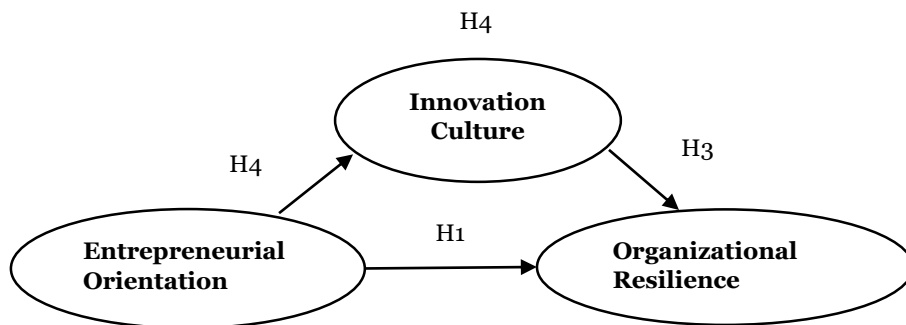


Figure 1: Conceptual Model

3. Methodology

This research study belongs to the *positivism research philosophy* and knowledge is acquired empirically based on measurement. The *research approach* of the study is *deductive*, and it starts with the grand theory of ‘dynamic capabilities’ and builds on it to investigate the relationship among three variables i.e., EO, OR, and IC. The *Survey strategy* is used for collecting rich data to answer research questions as it is cost-effective. In this study, the mono method is used and data is analyzed using *quantitative methods* based on the nature as well as objectives of the research. As this study collects data at one point in time according to objectives, and availability of time, it belongs to the *cross-sectional time horizon*. This study collects mainly numerical data using a *questionnaire*. The study is conducted in a natural environment with less interference from the researcher.

3.1. Population and sample of the study

The target population is 613 Departments in 15 SLSUs that come under the purview of the UGC based on the Sri Lanka University Statistics (2020) published by the UGC. These 15 universities are selected as all of them are established under the same Act of parliament (Act No. 16 of 1978) and the same rules, regulations, and circulars are applied to all of them. Further, the administration of these 15 universities and recruitment of staff to them are regulated by the UGC. Funding for these universities is provided by the government through the UGC. Although there are five (5) other state universities that operate in Sri Lanka, those are established by separate Acts of Parliament. Therefore, the environment of above mentioned 15 universities are similar when compared to the other five state sector universities, controlled by different Ministries of the government. By referring to Taherdoost (2016) and after considering resource and time limitations, the nature of the population, and in order to generalize the findings of the study to the target population, it was decided that the most suitable sampling technique for this study is stratified random sampling. The population is divided into strata or subgroups of subject streams as follows based on the academic faculties of universities as given in Sri Lanka University Statistics (2020); (i) Arts & Humanities (ii) Social Sciences & Management (iii) Sciences (iv) Engineering & Technology (v) Medicine & Health Sciences. Giving equal representation, 50 departments are selected randomly from each stratum. The total is 250 departments representing all subject streams and 15 universities. Adequacy of sample size is considered in the light of methodological literature by Krejcie & Morgan (1970).

3.1.1. Unit of analysis

In the study conducted by Ahiauzu & Eketu (2015) to investigate OR in public universities of South Nigeria, they have taken the university as the unit of analysis and collected data from Vice-Chancellors, Deans of Faculties, Directors, Registrars, and Deputy Registrars. Similarly, Olaleye et al., (2020) in their research on OR have focused on the university as the unit of analysis and have collected data from heads of departments also in addition to the above-mentioned categories of staff. As this study explores OR at the level of departments, this study takes departments of universities as the unit of analysis and heads of departments as key informants.

3.2. Operationalization of variables

All three variables in the conceptual model will be operationalized. The indicators are tested for clarity and appropriateness in a self-administered pre-test with a few respondents. The normality of each indicator is considered in the light of methodological literature.

3.2.1. Entrepreneurial orientation (independent variable)

Five-dimensional entrepreneurial orientation scale (FDEOS) developed by Zhang et al. (2014) is used in this study with necessary modifications to suit the study, due to the following reasons. (1) Scale has been developed after analyzing prior literature in the field for three decades and following group discussion with five scholars to improve content validity, (2) Items for the scale have been taken from the studies of well-recognized researchers in the field such as Covin & Slevin (1989), Lumpkin & Dess (2001), Chang et al., (2007), and Hughes & Morgan (2007), (3) Scale has been designed to be neutral with regard to industry context and type of organization, (4) Reliability and validity of the scale have been tested.

3.2.2. Organizational resilience (dependent variable)

Chen et al., (2021) address existing gaps and limitations in the field by forming a unified definition of OR and developing a scale to measure it. They use this scale to measure the OR of six highly resilient companies in the world existing for more than 40 years. After conducting necessary tests Chen et al., (2021) confirm that their measurement scale has good reliability and validity reflecting OR better. Therefore, the scale developed by Chen et al., (2021) is used with required modifications in this study to measure OR.

3.2.3. Innovation culture (mediating variable)

Al-Khatib et al., (2021) develop a scale based on studies of Wei et al. (2013) and Zhou et al., (2005) to measure IC in universities. As Al-Khatib et al., have used their scale in university setup it is more relevant for this study when compared to other available measurement scales which have not been used in the university sector. Therefore, this study uses the measurement scale developed by Al-Khatib et al., (2021) who consider innovation culture as a unidimensional construct, with necessary modifications to measure IC.

3.3. Data collection and analysis techniques

A structured questionnaire was developed based on previous measurement scales, pre-tested with few respondents, and administered. Due to time limitations and other cost factors, this research will use the e-mail method first to collect data from respondents. All structured questions will be measured on a five (5) point Likert scale representing (1) Strongly Agree, SA; (2) Agree, A; (3) Undecided, U; (4) Disagree, D; (5) Strongly Disagree, SD. The reliability of the data will be tested using Cronbach's Alpha and the construct validity will be tested using the Correlation Coefficient to minimize measurement error. The relationship between independent, dependent, and mediating variables will be assessed by Scatter plot and Pearson Correlation tests. The mediating effect on the relationship between the independent variable and the dependent variable will be assessed using Regression Analysis. Further, the effects of department characteristics on variables will be tested using ANOVA and Chi-Square tests appropriately. All analyses will be done through Smart PLS software.

4. Conclusion

This research investigates the relationship of three types of dynamic capabilities by empirically testing how EO capabilities in departments of SLSUs enhance resilience capabilities in those departments directly and indirectly through IC capabilities amidst a multitude of changes and challenges of the dynamic society. The analyzed data contributes effectively to answer the research questions and to achieve the objectives of the study. The findings support either accepting the hypotheses one by one, which include the proposed solutions for the identified research problem or rejecting them one by one opening new avenues for further research.

4.1. Theoretical and practical implications

This study will present theoretical and empirical contributions toward understanding the OR in SLSUs through the lens of DCs. Findings will enhance the understanding of how SLSUs use five EO dimensions to become resilient. Thus, this study will bridge the gap in theory created by the lack of recent research efforts to explain the required capabilities that universities need to develop to be resilient. It makes an incremental contribution to knowledge on how entrepreneurial orientations of universities manifest themselves in developing their capabilities to absorb and recover from disturbances and uncertainties. The study improves the theoretical understanding of the mediating role of IC towards the relationship between EO and OR through the dynamic capabilities' perspective. Findings add new knowledge to the

theory of DCs on relationships among different types of DCs, as EO, OR, and IC, the variables of this study, are identified as DCs in the extant literature, and relationships among DCs are not investigated according to past literature as mentioned under the theoretical gap. Further, identification of the most significant entrepreneurial orientations, and unique innovation cultures in SLSUs if any, will add new empirical knowledge to the field of EO, and IC. As there is a lack of research carried out on EO, OR, and IC in SLSUs, the outcome of this research is of considerable value to the local as well as international scholarly research literature.

This research has practical implications for authorities of state sector universities and practitioners also. The findings of this research assist to formulate policies and strategies in SLSUs for human and other resources development plans, to design incentive schemes for university staff encouraging innovative behaviour at the departmental level. Moreover, the findings can be used to formulate stimulus packages for universities in order to pave the way to provide quality education to realize a knowledge-based economy as mentioned under Vistas of Prosperity and Splendour, the government's new economic framework, producing a professional and skillful workforce to obtain upper-middle-income status for the country and for universities to be world-class and internationally ranked. Further, a study can be conducted based on this research to formulate a higher education resilience index for SLSUs.

4.3. Limitations and suggestions for future research

This study has several limitations which open opportunities for future studies. The study collects cross-sectional data that limit the views of the respondents to the situation at a point of time. Therefore, future studies can be based on longitudinal data to capture the development of respondents' perspectives over time. Further, this study will be limited to the investigation of the relationship between EO and OR, and mediating effect of IC on that relationship. There can be some organizational factors other than EO which may improve the OR and thus the impact of such factors like leadership, market orientation, etc. can be investigated. Similarly, the mediating role of variables other than IC can be tested. As this study is conducted in SLSUs under the purview of the UGC, it excludes the private sector universities in Sri Lanka, and SLSUs not coming under the UGC. Hence, the research outcomes cannot be generalized to other contexts where cultural, social, and economic differences prevail. Therefore, this model can be applied in private sector universities or in the manufacturing sector in Sri Lanka or in a different country with a diverse background. A comparative study between the state and private sector also can be conducted.

References

- Abdul-Halim, H., Ahmad, N.H., Geare, A. and Thurasamy, R. (2019). Innovation culture in smes: the importance of organizational culture, organizational learning, and market orientation. *Entrepreneurship Research Journal*, Vol. 9 No. 3. doi: 10.1515/erj-2017-0014.
- Abdullah, M., Husin, N. A., and Haider, A. (2020). Development of post-pandemic Covid 19 higher education resilience framework in Malaysia. *Archives of Business Research*, Vol. 8 No. 5. pp. 201-210.
- Ahiauazu, L. U. & Eketu, A. C. (2015). Product innovation and organizational resilience in public universities in South Nigeria. *European Journal of Business and Management* www.iiste.org ISSN 2222-2839 (Online) Vol. 7 No. 33.
- Al-Khatib, A.W., Al-Fawaer, M.A., Alajlouni, M.I., and Rifai, F.A. (2021). Conservative culture, innovative culture, and innovative performance: a multi-group analysis of the

- moderating role of the job type. *International Journal of Innovation Science*, pp.1757-2223. DOI 10.1108/IJIS-10-2020-0224.
- Alosani, M.S., Yusoff, R.Z., Al-Ansi, A.A., and Al-Dhaafri, H.S. (2021). The mediating role of innovation culture on the relationship between Six Sigma and organisational performance in Dubai police force. *International Journal of Lean Six Sigma* Vol. 12 No. 2, pp. 368-398. DOI 10.1108/IJLSS-11-2019-0110.
- Arend, R. J. & Bromiley, P. (2009). Assessing the dynamic capabilities' view: spare change, everyone?*Strategic Organization*, Vol. 7 No. 1, pp. 75–90. doi:10.1177/1476127008100132.
- Blanco, J.M.M. & Sustains, O.R.H.L. (2018). Organizational resilience: How learning sustains organizations in crisis, disaster, and breakdown. *Learn. Organ.*, Vol. 25, pp. 143–146.
- Baron, R.M. & Kenny, D.A. (1986). The moderator-mediator variable distinction in social psychological research: conceptual, strategic, and statistical considerations. *Journal of Personality and Social Psychology*, Vol. 51 No. 6, pp. 1173-82.
- Chen, C.L. & Jaw, Y.L. (2009). Building global dynamic capabilities through innovation: a case study of Taiwan's cultural organizations. *Journal of Engineering and Technology Management*, Vol. 26, pp. 247-263.
- Chen, R., Xie, Y., and Liu, Y. (2021). Defining, conceptualizing, and measuring organizational resilience: A multiple case study. *Sustainability*, Vol. 13, pp. 2517. <https://doi.org/10.3390/su13052517>.
- Coleman, R.O. & Adim, C.V. (2019). Entrepreneurial proactiveness and organizational resilience in mobile telecommunication firms in Rivers State, Nigeria. *The Strategic Journal of Business & Change Management*, Vol. 6 No. 3, pp. 454 – 465.
- Covin, J.G., & Slevin, D. (1989). Strategic management of small firms in Hostile and Benign environments. *Strategic Management Journal* Vol. 10 No. 1, pp. 75.
- Cvijic, M., Tatarski, J., Katic, I., Vekic, A., and Borocki, J. (2019). Entrepreneurial orientation of public universities in Republic of Serbia - Empirical Study. *Sustainability*, Vol. 11, pp. 1509. doi:10.3390/su11061509.
- Dobni, C.B. (2008). Measuring innovation culture in organizations: The development of a generalized innovation culture construct using exploratory factor analysis. *European Journal of Innovation Management*. Vol. 11 No. 4. pp. 539-559.
- Duchek, S. (2020). Organizational resilience: a capability-based conceptualization. *Business Research*, Vol. 13 No. 1, pp. 215–246. <https://doi.org/10.1007/s40685-019-0085-7>.
- Eshegheri, A.E. & Korgba, F. (2017). Entrepreneurial orientation and resilience of medium scale businesses in Nigeria. *European Journal of Business and Management*, Vol.9, No.35, pp. 7-12.
- Fernando, R.L.S. (2016). Managerial innovation in the public sector: An exploratory study on the state university administration in Sri Lanka. *In VJM*, Vol. 02 No. 1, pp. 41- 58.
- Hamel, G. & Valikangas, L. (2003). The quest for resilience. *Harvard Business Review*, Vol. 81 No. 9, pp. 52-63.
- Hanifah, H., Halim, H. A., Ahmad, N.H. and Vafaei-Zadeh, A. (2017). Innovation culture as a mediator between specific human capital and innovation performance among Bumiputera SMEs in Malaysia.
- Hanifah, H., Halim, H. A., Ahmad, N.H. and Vafaei-Zadeh, A. (2019). Emanating the key factors of innovation performance: leveraging on the innovation culture among SMEs in Malaysia. *Journal of Asia Business Studies*, Vol. 13 No. 4, pp. 559-587.
- Hayashi, R., Garcia, M., Maddawin, A., and Hewagamage, K.P. (2020). Online learning in Sri Lanka's higher education institutions during the COVID-19 Pandemic. *ADB Briefs* No. 151, Asian Development Bank. DOI: <http://dx.doi.org/10.22617/BRF200260-2>

- Isaksen, S.G. & Ekvall, G. (2010). Managing for innovation: the two faces of tension in creative climates. *Creativity and Innovation Management*, Vol. 19 No. 2, pp. 73-88.
- Kim, N.K. & Ahn, J.M. (2020). What facilitates external knowledge utilisation in SMEs? – an optimal configuration between openness intensity and organisational moderators. *Industry and Innovation*, Vol. 27 No. 3, pp. 210-234.
- Koller, M.R.T., Ortega, P.M., Anton, J.M.R., and Andrada, L.R. (2017). Corporate culture and long-term survival of Spanish innovative firms. *International Journal of Innovation Science* Vol. 9 No. 4, 2017 pp. 335-354. DOI 10.1108/IJIS-11-2016-0053.
- Louisot, J.P. (2015). Risk and/or resilience management. *Risk Governance & Control: Financial Markets and Institutions*, Vol. 5 No. 2, pp. 84-91. <https://doi.org/10.22495/rgecv5i2c1art2>
- Lumpkin, G.T. & Dess, G.G. (1996). Clarifying the entrepreneurial orientation construct and linking it to performance. *The Academy of Management Review*, Vol. 21 No. 1, pp. 135-72.
- Mafabi, S., Munene, J.C., and Ahiauzu, A. (2015). Creative climate and organisational resilience: the mediating role of innovation. *International Journal of Organizational Analysis* Vol. 23 No. 4, pp. 564-587. DOI 10.1108/IJOA-07-2012-0596
- Michaelis, T.L., Aladin, R. and Pollack, J.M. (2018). Innovation culture and the performance of new product launches: a global study. *Journal of Business Venturing Insights*, Vol. 9, pp. 116-127.
- Olaleye B.R., Anifowose, O.N., Efuntade A.O., and Arije, B.S. (2020). The role of innovation and strategic agility on firms' resilience: A case study of tertiary institutions in Nigeria. *Management Science Letters* 11, p. 297-304. doi: 10.5267/j.msl.2020.8.003
- Pavlou, P.A. and El Sawy, O.A. (2011). Understanding the elusive black box of dynamic capabilities. *Decision Sciences* Vol. 42 No. 1, pp. 239-273.
- Perera, L.N.S. and Senarath, S.A.C.L., (2016). Impact of internal governance on creating entrepreneurial universities: a study based on Sri Lankan universities. *Kelaniya Journal of Management*, Vol. 5 No. 1
- Puranam, P., Singh, H., and Zollo, M. (2006). Organizing for innovation: Managing the coordination-autonomy dilemma in technology acquisitions. *Academy of Management Journal*, Vol. 49 No. 2, pp. 263-280.
- Samarasinghe, G.D., Mudalige, D.M., Samarasinghe, N.C., and Kuruppu, G.N. (2020). The emergence of university entrepreneurial orientation in a technological university: A case of a Sri Lankan national university. *Vidyodaya Journal of Management*, Vol. 06 No. 2, pp. 01- 29.
- Sanchez-Barriloungo, M. and Benneworth, P. (2019). Is the entrepreneurial university also regionally engaged? Analysing the influence of university's structural configuration on third mission performance. *Technological Forecasting and Social Change*, Vol. 141, pp. 206-218.
- Shirokova, G., Bogatyreva, K., Beliaeva, T. and Puffer, S. (2016). Entrepreneurial orientation and firm performance in different environmental settings: contingency and configurational approaches. *Journal of Small Business and Enterprise Development*, Vol. 23 No. 3, pp. 703-727.
- Silver, J.K., Binder, D.S., Zubcevik, N. and Zafonte, R.D. (2016). Healthcare hackathons provide educational and innovation opportunities: a case study and best practice recommendations. *Journal of Medical Systems*, Vol. 40 No. 7, pp. 177.
- Strobl, A., Niedermair, J., Matzler, K. and Mussner, T. (2019). Triggering subordinate innovation behavior: the influence of leaders' dark personality traits and level 5 leadership behavior. *International Journal of Innovation Management*, Vol. 23 No. 05.

- Teece, D.J. (2009). *Dynamic capabilities and strategic management: Organizing for innovation and growth*, Oxford University Press, New York, NY.
- Teece, D. J. (2017). Towards a capability theory of (innovating) firms: Implications for management and policy. *Cambridge Journal of Economics*, Vol. 41 No. 3, pp. 693–720. <https://doi.org/10.1093/cje/bew063>.
- Teece, D. J. (2018). Managing the university: Why “organized anarchy” is unacceptable in the age of massive open online courses. *Strategic Organization*, Vol. 16 No. 1, pp. 92–102. doi.org/10.1177/1476127017732760
- Teece, D.J., Pisano, G. and Shuen, A. (1997). Dynamic capabilities and strategic management. *Strategic Management Journal*, Vol. 18 No. 7, pp. 509-533.
- Todorovic, Z. W., McNaughton, R. B., and Guild, P. (2011). ENTRE-U: An entrepreneurial orientation scale for universities. *Technovation* Vol. 31, pp. 128–137.
- Wang, C.L. & Ahmed, P.K. (2007). Dynamic capabilities: a review and research agenda. *International Journal of Management Reviews*, Vol. 9 No. 1, pp. 31-51.
- Wei, Y., O’Neill, H., Lee, R.P., and Zhou, N. (2013). The impact of innovative culture on individual employees: the moderating role of market information sharing. *Journal of Product Innovation Management*, Vol. 30 No. 5, pp. 1027-1041.
- Wiklund, J. & Shepherd, D. (2005). Entrepreneurial orientation and small business performance: a configurational approach. *Journal of Business Venturing*, Vol. 20 No. 1, pp. 71-91.
- Williams, T.A., Gruber, D.A., Sutcliffe, K.M., Shepherd, D.A., and Zhao, E.Y. (2017). Organizational response to adversity: fusing crisis management and resilience research streams. *Academy of Management Annals*, Vol. 11 No. 2, pp. 733-769.
- Zhang, H., Zhang, T., Cai, H., Li, Y., Huang, W.W., and Xu, D. (2014). Proposing and validating a five-dimensional scale for measuring entrepreneurial orientation. *Journal of Entrepreneurship in Emerging Economies* Vol. 6 No. 2, pp. 102-121. DOI 10.1108/JEEE-03-2014-0004
- Zhou, K.Z., Gao, G.Y., Yang, Z. and Zhou, N. (2005). Developing strategic orientation in China: antecedents and consequences of market and innovation orientations. *Journal of Business Research*, Vol. 58 No. 8, pp. 1049-1058.
- Zollo, M. & Winter, S.G. (2002). Deliberate learning and the evolution of dynamic capabilities. *Organization Science*, Vol. 13 No. 3, pp. 339-351.

