STUDENT RELATIONSHIP MANAGEMENT FACTORS FOR HIGHER
EDUCATION SUSTAINABILITY USING NOVEL MULTI-METHOD
APPROACH

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Dedicated to

my beloved mother and father

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ABSTRACT

The importance of sustainable development in the university systems has specifically been clarified during the United Nations Decade (2005 to 2014), under the banner of Education for Sustainable Development. Universities are at the forefront of accomplishing the transitions to truly sustainable societal development, but in need of new holistic approaches to succeed. In pursuit of this aim, the research for this study was built upon the discussion concerning the student relationship management strategy, which aligned with the strategic practices of the customer relationship management system. Despite its significance and capability, there has been little theoretical and empirical research on this matter. In an attempt to address the lack of research on the clarification and operationalization of this strategy, a novel multi-method approach was implemented in three sections. The first section led to identifying an initial six-factor structure based on factor analysis of a study with 382 respondents from the students of Universiti Teknologi Malaysia. Next, interpretive structural modeling was performed using a survey of experts' judgment to develop the initial structure. Finally, structural equation modeling was applied to test the developed model. Upon validation of the proposed model, the results revealed a six-factor interpretive structural equation model with five levels. The analyses indicated that there were strong relationships between the identified factors throughout the model. 'Knowledge management' was found as an infrastructure with a high driving power. The critical factors of 'student relationship management technology', 'knowledge diffusion', and 'knowledge acquisition and application', which constitute the fundamental triangle for implementation of the application were strongly correlated. The research findings highlighted the importance of this strategy in making the effective transition; there can be a better university on the right track to becoming sustainable through the proper implementation of this holistic approach.

ABSTRAK

Kepentingan Pembangunan Lestari di dalam sistem universiti telah diperjelaskan secara terperinci ketika perhimpunan Sedekad Persatuan Bangsa-Bangsa Bersatu (2005-2014) di bawah sepanduk 'Pendidikan untuk Pembangunan Lestari'. Universiti adalah terkehadapan dalam usaha ke arah Pembangunan Kelestarian Sosial, tetapi memerlukan pendekatan holistik yang baru untuk berjaya. Untuk memenuhi hasrat tersebut, satu kajian telah dibina berdasarkan perbincangan berkaitan Strategi Pengurusan Hubungkait Siswazah, yakni, seiring dengan amalan Strategi Pengurusan Hubungkait Pelanggan. Walaupun telah diakui keberkesanan dan keupayaan strategi ini, namun, hanya terdapat sebilangan kecil kajian secara teori dan empirikal yang dapat diperolehi ketika ini. Dalam usaha untuk menangani kekurangan penyelidikan terhadap kejelasan dan struktur operasi strategi ini, satu pendekatan baru dengan kaedah kepelbagaian telah dilaksanakan dan terbahagi kepada tiga bahagian. Bahagian pertama mendorong kepada pengenalan enam faktor utama berdasarkan faktor analisa kajian yang terdiri daripada 382 responden daripada pelajar UTM. Seterusnya, permodelan struktur tafsiran dijalankan menggunakan kajian penilaian pakar bagi mengembangkan struktur utama. Akhir sekali, Pemodelan Persamaan Struktur digunakan untuk menguji model yang dikembangkan. Setelah pengesahan dijalankan terhadap model yang dikembangkan, hasil ujian mendedahkan tafsiran terhadap Struktur Enam Faktor dengan Permodelan Persamaan Struktur dalam lima peringkat. Analisa tersebut menunjukkan terdapat hubungan yang kuat antara faktor-faktor yang telah dikenalpasti pada keseluruhan model. Faktor-faktor penting 'Teknologi Pengurusan Hubungan Pelajar', 'Penyebaran Ilmu', dan 'Perolehan dan Aplikasi Ilmu', yang merupakan asas segi tiga bagi perlaksanaan aplikasi adalah amat berkait rapat. Hasil kajian telah menekankan kepentingan strategi ini dalam melaksanakan peralihan yang berkesan, dimana terdapat institusi yang lebih baik di landasan yang betul untuk menjadi lestari melalui perlaksanaan pendekatan yang menyeluruh dan teratur.

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LIST OF ABBREVIATIONS

CFA	-	Confirmatory Factor Analysis
CRM	-	Customer Relationship Management
DESD	-	Decade of Education for Sustainable Development
EFA	-	Exploratory Factor Analysis
EI	-	Employees' Involvement
ESD	-	Education for Sustainable Development
FA	-	Factor Analysis
HEIs	-	Higher Education Institutions
HESD	-	Higher Education for Sustainable Development
ISEM	-	Interpretative Structural Equation Modeling
ISM	-	Interpretative Structural Modeling
KAA	-	Knowledge Acquisition and Application
KD	-	Knowledge Diffusion
SD	-	Sustainable Development
SEM	-	Structural Equation Modeling
SO	-	Student Orientation
SRM	-	Student Relationship Management
SRMR	-	Student Relationship Management Results
SRMT	-	Student Relationship Management Technology
TQM	-	Total Quality Management
UN	-	United Nations
UNESCO	-	United Nations Educational, Scientific and Cultural Organization
WCED	-	World Commission on Environment and Development

LIST OF SYMBOLS

V	-	Factor i will help achieve Factor j
A	-	Factor j will help achieve Factor i
X	-	Factors i and j will help achieve each other
O	-	Factors i and j are unrelated

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CHAPTER 1

INTRODUCTION

1.1   Overview

A pervasive blueprint for taking action toward sustainable development (SD), Agenda 21, which was ratified in Rio de Janeiro, Brazil in 1992, clarifies the important roles of education for sustainable development (ESD): Education plays a critical role in supporting SD and enhancing the people's capacities to address the environmental and developmental concerns (UN, 1993). Having the horizon of synthesis of the SD's principles and practices into all levels of education and learning, a decade of education for sustainable development (DESD) (2005 to 2014) was planned to make the hands of changes more powerful (UNESCO, 2014a). In this regard, the task of inculcating the process of keeping the educative stability is performed through SD in higher education which is dependent on the durable thinking, educational goals, and multidimensional methods in a systematic and holistic way (Foo, 2013). Many declarations, charters, partnerships, entire Special Volumes (SVs) of the prestigious journals, and individual articles have been dedicated to this end, providing the guidelines/frameworks for higher education institutions (HEIs) to better develop sustainability into their system. However, HEIs are at the front line of shaping paradigms, educating and specializing the future human capital (Lozano *et al*., 2013), and, consequently, creating a sustainable future (UNESCO, 2014b). Hence, advancing SD in these institutions must be involved with more concrete actions. Holm *et al*. (2015a) found that integrated management systems can be applied to such issues.

During the recent decades and in the current climate, the angle of the organizations' viewpoint to the customers has changed in a way that they are considered as colleagues, partners, value creators, or developers of knowledge (Martelo *et al*., 2013). Following this viewpoint, among most important actions toward customers' satisfaction that derives their loyalty and commitment to the customer value creation, the customer relationship management (CRM) is a well-known approach to meet the two goals: the customers' needs, and the organizational sustainability through sustainable relationships development. In fact, the CRM system is a huge part of the organizational success, which contributes to establishing the proposed customer satisfaction-retention-loyalty chain by Heskett *et al*. (1994). This system improves the organizational knowledge and ability to interact, attract, and construct the long-lasting relationships with the respective clients (Garrido-Moreno and Padilla-Meléndez, 2011). Applying this approach in university as the academic powerhouse in creating human capital has led to a new concept, known as student relationship management (SRM), which has been coined by Hilbert *et al*. (2007), and Ackerman and Schibrowsky (2007) during the decade of ESD. However, universities are not apart from the organizations (Lozano, 2006a), which should reflect a particular vision, mission, and values in developing the durable relationships to create the maximum student value to expedite the formation of a sustainable future.

Given the growing global viewpoints on SD, as popularly defined by WCED (1987) as "Our Common Future", a large number of the scientific communities has been involved in assuring that it is the "Golden Thread" at all educational levels (see Holm *et al*., 2016). It implies that universities are expected to improve their system toward maximizing the student value to going beyond SD. Nevertheless, the numerous stakeholders and leaders in a university are uninformed about these viewpoints and unsustainability is touchable in the activities of the university (Nejati and Nejati, 2013). Lozano *et al*. (2015a) underlined most SD efforts have not holistically been integrated throughout the university systems. There is a need for new approaches based on systems thinking and continuous improvement (Holm *et al*., 2015b).

Therefore, this research is undertaken to build upon the discussion concerning the SRM strategy. It comprehensively contributes to the conceptualization and operationalization of this strategic approach, providing a comprehensive definition as

well as an empirical model of the structures and infrastructure of the SRM strategy using a novel multi-methods approach. Despite its importance and capability, there has been little theoretical and empirical research published on this matter and these scattered and insufficient publications have also involved this issue as a retrospective component.

1.2   Background of Research

The importance of sustainable development (SD), outlined from the Brundtland Report as "Our Common Future" to the Rio+20 declaration as "The Future We Want", potentially is in understanding relationships of humanity with nature and inter-human and partially to set the global awareness programs up in the environmental problems, socioeconomic issues that are associated with indigence and inequality, and anxieties over a healthy future for humanity (Hopwood *et al*., 2005). The role of education was soon highlighted for this concept, as explicitly reported in Principle 36 of Agenda 21 (Rio Declaration: Earth Summit) that is divided into three programme areas: reorienting education toward SD, increasing public awareness, and promoting training. Education for sustainable development (ESD) intends to contribute a consistent interaction between these areas in shaping a more sustainable future. This issue is clearly explained by Sanusi and Khelghat-Doost (2008) that "ESD enables the development of knowledge, values and skills, individually and collectively, locally and globally, which will improve the quality of life". They believe the role of universities as the primary mover for ESD is especially crucial, and found that being part of the Regional Centre of Expertise network provides various reciprocal benefits in promoting the ESD agenda.

The higher education systems have been in the spotlight since the evolution of the declarations; from the 'Stockholm' declaration in 1972 and 'Tbilisi' declaration in 1977, which were the date predecessors of higher education for sustainable development (Holm, 2015a) to the latest initiatives including the 'Higher Education Sustainability Initiative' and the 'Rio+20 Treaty on Higher Education'. At the turn of 1990, to develop the sustainability elements in higher education institutions (i.e.

teaching, research, operations, and outreach), over 300 universities in over 40 countries established the 'Talloires' declaration, which is a ten-point action plan (Alshuwaikhat and Abubakar, 2008). Accordingly, the voluntary and committed projects were embarked upon incorporating sustainability into their systems and making the clear vision, mission and values, and strategic framework and planning to attain a sustainable campus based on the ideals and principles that underlie SD. In pursuit of this global aim, the world leaders at the series of events adopted the important declarations, charters and partnerships, known as Halifax in 1991, Kyoto in 1993, Swansea in 1993, COPERNICUS in 1994, GHESP in 2000, Lüneburg in 2001, Barcelona in 2004, Graz in 2005, Bergen in 2005, Abuja in 2009, Turin in 2009, and Rio+20 HESI in 2012. The purpose of these milestones has been providing the guidelines for higher education institutions to better develop sustainability into their system (Tilbury, 2011; Lozano *et al*., 2013).

Initially, the four founding partners of the initiative including the International Association of Universities, the University Leaders for a Sustainable Future, COPERNICUS-CAMPUS, and UNESCO joined together to combine strengths in an effort toward encouraging universities to support SD (Foo, 2013). Consequently, to create a more sustainable and just society for all, the university leaders and academic staff across all disciplines have been working to focus on educational and organizational aspects of SD. In this regard, the requirement of monitoring and evaluating progress is functioned today by the United Nations Educational, Scientific and Cultural Organization (UNESCO), which is the lead organization for the United Nations (UN) decade of education for sustainable development (DESD), spanning 2005 to 2014. The main aim of this decade has been developing the educational structure, so that maximize the student value to going beyond the triple-bottom line. It offers academies a unique opportunity to make the deep and radical changes from the unsustainable status quo to a more sustainable-based state.

During the United Nations decade of education for sustainable development (UN DESD) (2005 to 2014), many efforts and studies have significantly been made. Fenner *et al*. (2005) took account of the recognized key themes to engineering education for sustainable development, so as to examine a change process directed toward introducing concepts of SD into the activities of the Department of Engineering

at Cambridge University, UK. They focused on the paradigms and pedagogy of teaching sustainable development issues to engineers, encountered the notes on barriers to progress, and found that the ability to inaugurate a change process is an essential skill that must be formally created in those engineers wishing to contribute the sustainable solutions (Fenner *et al.*, 2005). Greening the curricula and operational practices, the Young Masters Program, and the Long-term strategic planning in the research, teaching, and service elements have also been stressed by Haigh (2005), McCormick *et al.* (2005), and Moore (2005), respectively.

In 2006, Lozano has specifically recommended that "students: you, as the future leaders and decision-makers of society must learn about and apply the concepts, approaches and values of SD into your university and professional lives. If your university still has not started to incorporate SD, become part of or create a student organization to promote SD in your campus context (Lozano, 2006a, p.795)". He believes the SD incorporation and institutionalization is a radical innovation, which should incrementally be performed by participating and empowering all the stakeholders to overcome the resistance to change. The importance of sustainability assessment and reporting was also stressed by Lozano (2006a,b). A model of staged learning and change linking institutional change with deepening student experience was suggested by Sterling and Thomas (2006), after reviewing some schemata in the ESD deliberation. Velazquez *et al.* (2006) depicted the model of a sustainable university, which defined as "a higher educational institution, as a whole or as a part, that addresses, involves and promotes, on a regional or a global level, the minimization of negative environmental, economic, societal, and health effects generated in the use of their resources in order to fulfill its functions of teaching, research, outreach and partnership, and stewardship in ways to help society make the transition to sustainable lifestyles (p. 812)". Many studies have been recognized during this year (2006). In many cases, the focus has been upon the curricula element (e.g. Bremer and Lopez-Franco, 2006; Chalker-Scott and Collman, 2006; Ferreira *et al.*, 2006; Fisk and Ahearn, 2006; Juarez-Najera *et al.*, 2006; Kamp, 2006; Steiner and Posch, 2006; Sterling and Thomas, 2006; Wright, 2006), and in other cases, there has been a bias toward considering other critical elements such as research (e.g. Steiner and Posch, 2006), campus operations (e.g. Cantalapiedra *et al.*, 2006; Ferreira *et al.*, 2006; Nicolaides, 2006), outreach and collaboration (e.g. Gao *et al.*, 2006; Martinez *et al.*,

2006), assessment and reporting (e.g. Bremer and Lopez-Franco, 2006; Lozano, 2006a,b), and institutional framework (e.g. Cantalapiedra *et al*., 2006; Juarez-Najera *et al*., 2006; Kamp, 2006). In some cases, more significant, most of these critical elements were theoretically, empirically, and analytically discussed (e.g. Koester *et al*., 2006; Lozano, 2006a; Velazquez *et al*., 2006).

Adomssent *et al*. (2007) provided an empirical evidence for the successful transdisciplinary techniques development for sustainability throughout all level of higher education. They have practically implied that a systemic/holistic approach (an appropriate quality assessment mechanism) is requisite for synergies rather than concentrating upon isolated sustainability fields of action (Adomssent *et al*., 2007). Hilbert and his colleagues (2007) introduced the notion of student relationship management, as experienced at the German universities, and demonstrated the potential of this holistic approach to developing sustainability in the higher education systems (Hilbert *et al*., 2007). Similarly, Ackerman and Schibrowsky (2007) emphasized how important it is for universities toward learning and excellence in the developmental issues. The articles by Hilbert *et al*. (2007) and Ackerman and Schibrowsky (2007), which coin the theme of student relationship management (SRM), have generally reported on creating sustainable relationships with students to pave the way for higher education sustainability.

Alshuwaikhat and Abubakar (2008) proposed a framework to looking into the sustainability issues through integrating three strategies, including 1) university environmental management system, 2) public participation and social responsibility, and 3) promoting sustainability in teaching and research. In general, there is a considerable development in the policy and practice framework for the sake of sustainability in many universities, representing the emergence of SD as a concept and a growing need for generating a global movement for change (Wade, 2008).

Sustainable development in universities was widened to include the broader ESD agenda by working the UNESCO in practice, declaring a UN DESD (2005 to 2014), and moving to "green universities" under the direction of Agenda 21. However, there are challenges on this path. One is how much change is needed in universities toward sustainability (Thomas, 2009). He argued that developing critical thinking is

essential as such. Evangelinos *et al.* (2009) stated the improvement of environmental management and knowledge diffusion on the importance of sustainability can lead to developing sustainability in higher education. Wals and Blewitt (2010) found that most articles published in the International Journal of Sustainability in Higher Education, spanning 2001 to 2010, have concentrated on the environmental management, the greening of universities, and the reduction of an ecological footprint of the university.

Reaching the mid-term point of the DESD, which began in 2005, has not yet touched in the notable way and actions worldwide, whereas there are many of DESD-based efforts globally (Ferrer-Balas *et al.*, 2010). As affirmed by Waas *et al.* (2010), new ways of conducting research are needed for SD to become thoroughly performed in higher education institutions and for these institutions to become certain leaders of SD, suggesting a beginning of the dialogue on the (re)orientation of research toward SD for various university stakeholders. There is insufficient research examining what the major stakeholders in universities think about sustainability (Wright, 2010), and there is a need for understanding and practicing sustainability aspects by all members of the university (Waas *et al.*, 2011).

In this regard, Lozano (2011) emphasized how important "sustainability reporting in universities" was to better institutionalize and systematize sustainability. Leal-Filho (2011) presented issues in an organized way to the seat of SD in universities, and asserted that the quality of education and research will be increased by the sustainability-related holistic approaches. Thomas *et al.* (2012) also discussed the major elements of the jigsaw puzzle to drive implementing the sustainability issues in universities.

As such, the focuses specifically on processes and learning around the globe is highlighted by the report of UNESCO 2012 that pursued the first report in 2009, denoting the ESD's potential and challenges throughout all educational levels (UNESCO, 2012a). Formulating pedagogies related to ESD include the movement from both teacher-based to student-based lessons and rote memorization to participatory learning to stimulate the ability to investigate, think critically and create decisions was reported. The requirement for changing the focus of the educational structure toward allowing the human being to obtain the knowledge, abilities,

perspectives, and values needed to contribute to SD is also emphasized by them in the final report in 2014, entitled "Shaping the Future We Want" (see UNESCO, 2014a). To this end, the UNESCO, which has been accredited to facilitate the far-reaching educational transitions, set out three strategic objectives for a post-2015 global education agenda which involve encouraging Member States to develop high quality systems as well as long-term public education, supporting creative activities for the learners and making them responsible global citizens, and prompting public education and building the prospective global schooling agenda (UNESCO, 2014b).

Malaysia is one of the signatories of Agenda 21 (Sanusi and Khelghat-Doost, 2008; Saadatian *et al*., 2009; Foo, 2013; Nejati and Nejati, 2013), which is a most widely recognized declaration regarding SD. She encompasses 20 public universities, 24 polytechnics, 37 community colleges and other private and foreign university branches that actively involve students in learning (Saadatian *et al*., 2009). Being an actual partner in universal health, global economics and environmental developments, Malaysia has mainly attempted to involve an introduction of governing measures to balance the purposes of socioeconomic development with the maintenance of sound environmental conditions since the 1970s. Calling for a comprehensive quantum leap toward a knowledge-centered society, both the Outline Perspective Plans and the Malaysian Vision 2020 were the loci in which these objectives were located in. The National Education Policy of Malaysia is also formed to advance Malaysia's education system and empower it to become the educational hub of excellence in terms of satisfying the needs of students and providing quality and accessibility to all educational levels (Foo, 2013). At the end of the decade (DESD) (2005 to 2014), Malaysia National Education in accordance with the needs, as outlined in Agenda 21, has reported a post-2015 Education Blueprint, which is concentrated on promoting access to education, establishing standards with more emphasis on higher order thinking skills, meeting achievement gaps, strengthening unity among students, and maximising system efficiency (UNESCO, 2015). It highlights the urgency of embedding sustainability in the educational systems. Moreover, the necessary effective cooperation for developing, testing and assisting the multidisciplinary strategies pre-planned for promising intention of making progress toward a sustainable society is observable in the urgency of adopting the sustainability paradigm.

1.3   Research Problems

More or less, our success has not reached the point where we wished for, despite all efforts to develop sustainability in higher education systems to create a sustainable future (Foo, 2013; Lozano *et al*., 2013; UNESCO, 2014a,b; Lozano *et al*., 2015a; Holm *et al*., 2015a,b; Khalili *et al*., 2015; Holm *et al*., 2016).

Foo (2013) suggested, in Malaysia, to foster the process of establishing the sustainable higher education institutions toward shaping a sustainable future, more strategies and actions must be innovatively followed. Lozano *et al*. (2013) proposed that universities and their leaders must make certain that they better understand and address the present and future generations' needs, advancing sustainability into all university system levels. The UNESCO (2014a,b) emphasized the importance of implementing the ESD agenda following the postulates and paragons of SD. The results of Lozano and his colleagues from a worldwide survey also highlighted strong links between SD commitment and its implementation (Lozano *et al*., 2015a). They reported the efforts have not holistically been integrated throughout the higher education system for the sake of SD. There is a necessity for new approaches/strategies to enhance SD based on system thinking and continuous improvement (Holm *et al*., 2015a). Holm *et al*. (2015b) developed a framework to visualize the implementation of sustainability in universities according to the total quality management (TQM) plan-do-check-act cycle. They affirmed the integrated management systems can be employed to this end. It is evident that by the challenge of SD as considerable as ever, its goals and objectives are not met by current technological advances, legislation, and policy framework unless the gathering of changes in mindsets, values and lifestyle, and intensifying people's capacity to make up changes accompany together (Khalili *et al*., 2015). In general, a challenge that still remains is how sustainability can be developed in a deeper and more holistic way in the university systems, as highlighted by Holm *et al*. (2016).

In pursuit of these global movements, as systematically reviewed in the subsequent chapter, the research for this thesis was built upon the discussion concerning the SRM strategy due to its holistic approach, as, Hilbert *et al*. (2007)

described it as "a fundamental strategic orientation of the entire academy aiming at the increase of student satisfaction and the creation of additional value for the students as well as for the academy (p. 209)". Ackerman and Schibrowsky (2007) have also asserted the importance of SRM as "an institutional philosophy, which contributes a different view of the institution's interactions with students (p. 328)". They found the future of higher education in building the sustainable relationships with students, under the theme of 'student relationship management (SRM)'.

The discourse upon this underlying theme is rather limited (Ackerman and Schibrowsky, 2007; Hilbert *et al.*, 2007; Piedade and Santos, 2008; Shannaq *et al.*, 2010; Drapińska, 2012; Lechtchinskaia *et al.*, 2012; Radenković *et al.*, 2013; Fontaine, 2014; Gholami *et al.*, 2015), highlighting the existing gap regarding this missing link in higher education systems. Thus, an opportunity exists for innovative research. Based on Hilbert *et al.* (2007), "a common model as well as a clearly defined concept for an effective realization of student-orientation is still missing (p. 328)".

The articles by Piedade and Santos (2008; 2010) documented the importance of SRM as a business intelligence in higher education and verified the lack of an adequate technological support to implementation of the SRM concept and practice. Following, it is proposed an architecture of SRM, which composed mainly of four main components: (1) the data acquisition and storage component, (2) the data analysis component, (3) the interaction component, and (4) the assessment component. Therefore, the main aim of them has been providing a technological tool, which supports Portuguese higher education institution in the student relationship management process. In general, they defined and examined the theme of SRM based on a technological perspective, while a key reason for SRM failure has been viewing SRM as a technology initiative (Ackerman and Schibrowsky, 2007; Hilbert *et al.*, 2007; Fontaine, 2014; Gholami *et al.*, 2015).

Shannaq *et al.* (2010) by drawing on Hilbert *et al.* (2007) research indicated the capability of SRM to enhance the quality of the higher educational system. In this regard, the data mining technique to improve the current trend on the institution from the Arabic region has unclearly been employed. They concluded that this approach can

contribute to promoting the students' loyalty as well as developing the quality of educational systems.

In 2012, the paper by Drapińska presents a concept of SRM in higher education and highlights key relationships that should be built by an educational institution with special emphasis placed on students as the most important customers. It elaborates on the notion of loyalty as the aim of building sustainable relationships with students and its specificity due to the special nature of an educational environment. In this research, the proposed concept emphasizes the role of value for customer, dialog, trust and engagement which combine to increase student loyalty. At the end, it is argued that presented concept may serve as a basis for further theoretical research, while the leading literature concerning both SRM (i.e. Ackerman and Schibrowsky, 2007; Hilbert *et al.*, 2007) and the CRM system were thoroughly neglected (Drapińska, 2012).

Lechtchinskaia *et al.* (2012) by drawing on Hilbert *et al.* (2007) research affirmed that SRM is a key instrument in attracting paying students and retaining a long-lasting relationship, which in turn provides financial benefits and enhances the reputation of the university, but, until today, the role of it has too often been ignored. They revealed a lack of literature on the subject, while they were investigating the requirements of a SRM system in the four largest Ivy League universities (Columbia University, Harvard University, Cornell University, and University of Pennsylvania). Their results from an empirical analysis indicated that university administration needs to improve their relationship and communication habits with the target groups. Because modern communication channels such as social network, blogs, and apps are not yet wide-spread in this context, SRM system needs to be further enhanced to include them.

The paper by Radenković *et al.* (2013) described SRM as (1) the best method for improving communication and collaboration between educational institutions and students as well as for promoting the institutions' services and activities, and (2) the fundamental part of an educational institution's business portfolio, which includes a set of methods, techniques and best practices that should be implemented within an educational institution. The architecture of SRM system based on cloud computing

infrastructure (a technological perspective) has implicitly been presented in the e-learning system of E-business Lab, at Faculty of organizational sciences, the University of Belgrade as a proof of concept. They have generally concluded that providing SRM services on cloud computing infrastructure contributes to better collaboration and communication between students and educational institution and increases performances of the educational process.

Fontaine in 2014, by drawing on Ackerman and Schibrowsky (2007) study, theoretically developed the concept of SRM to improving the SRM's knowledge of literature. A glossary of terms according to the student-as-customer perspective has significantly been presented in this investigation. Finally, he highlighted that the future of higher education is in building long-term relationships with students, agreeing with Ackerman and Schibrowsky (2007), who coined SRM as an institutional philosophy.

Since the discourses upon this field have just started to develop, an opportunity exists for further research (Hilbert *et al*., 2007; Lechtchinskaia *et al*., 2012; Gholami *et al.*, 2015). The lack of research on the clarification, conceptualization, and operationalization of this strategic approach is obvious, as there is little published empirical and theoretical research on this matter and these scattered and insufficient publications have also involved this issue as a retrospective component. While the importance of implementing an effective SRM has been stressed for universities (cf. Ackerman and Schibrowsky, 2007; Hilbert *et al*., 2007; Piedade and Santos, 2008; Shannaq *et al*., 2010; Lechtchinskaia *et al*., 2012; Radenković *et al*., 2013; Fontaine, 2014; Gholami *et al.*, 2015), no previous studies have explicitly and systematically addressed the specific model, critical success factors, valid measurement scale and empirical tests to implementation. It seems relatively small – it is a missing link in the higher education systems and in need of movement to generate a significant outlook. To be more exact, there is a need for the clarification of concept in accord with the relevant leading literature as well as for the exploratory and explanatory models of SRM strategy in a holistic way based on the principal variables that specify the successful accomplishment of this strategy. So as to narrow the existing gap, this research as one of the preliminary studies clarifies the research questions and objectives, which presented in the following sections.

1.4   Research Questions

In order to narrow the existing gap, the research questions were formulated as follows:

1) What is SRM?

2) How can it be implemented properly in a university system?

    2.1)   Is there a specific model of SRM?

    2.2)   What are the critical success factors for impementation?

    2.3)   Is there any valid standard scale for measurement of this approach?

1.5   Research Objectives

In an attempt to address the research questions, the main objectives of this research were designed as follows:

1) To clarify the concept of student relationship management (SRM).

2) To create the valid standard scale of SRM, along with its factorial structure using factor analysis (FA).

3) To develop the FA-based structural model using interpretive structural modeling (ISM).

4) To examine the ISM-based model using structural equation modeling (SEM).

1.6   Research Scope

The research scope of this study is as follows:

1) The orientation of this research is operational, from the strategy point of view survey, the exploratory objective point of view ─ descriptive and analytic. It begins with the literature study consisting of a review of keywords including sustainability, sustainable development (SD), education for sustainable development (ESD), higher education for sustainable development (HESD), sustainable development in higher education institutions (HEIs), total quality management (TQM), student relationship management (SRM), customer relationship management (CRM), factor analysis (FA), interpretive structural modeling (ISM), and structural equation modeling (SEM).

2) It is theoretically explored in the nature of CRM, so as to develop the current literature of SRM with a separate identity, as coined by (Hilbert *et al*., 2007; Ackerman and Schibrowsky, 2007).

3) It is empirically investigated in the existing top university in Malaysia, namely Universiti Teknologi Malaysia (UTM); a large public research-intensive university, which is moving toward a sustainable campus and complying with the ESD agenda.

4) At the core of the empirical investigation, the research methodological approach utilizes the perception of 382 university students and academicians' perspectives, who are the major stakeholders in support of the goals.

5) In doing so, IBM®SPSS®AMOS™22 software package has been employed. Besides, MATLAB software was partly used.

1.7   Research Significance and Contributions

Sustainability in higher education institutions has recently been clarified to speed up the sustainable societal transitions under the banner of 'Education for Sustainable Development', where the significance of universities is explicitly emphasized to create a sustainable future. The prime objective for the United Nations Decade of Education for Sustainable Development, from 2005 to 2014, is developing sustainability in the educational system, so that maximize the student value to going beyond the triple-bottom line, highlighting the importance of going beyond profitability and wealth creation as the sole measure of an institution's contribution to society to include environmental and social impacts. There has been an increasing number of declarations, charters, partnerships, entire SVs of the prestigious journals, and individual articles within this context, presenting the guidelines/frameworks for such institutions in order to better develop sustainability into their system.

In this regard, this research has globally been aimed at underlining the existing challenge, i.e. 'how sustainability can be developed in a deeper and more holistic way in these institutions'. It addresses the challenge through mapping the recognized declarations and considerations, contributing a review of international and regional progress in this area. In particular, the research contributes a sustainability-oriented perspective for universities to better represent transitions from the unsustainable status quo to a more sustainable-based state. Accordingly, it is observed a need for the new holistic approaches/strategies/systems to this end. Moreover, the necessary effective cooperation for developing, testing and assisting the multidisciplinary strategies pre-planned for promising intention of making progress toward a sustainable society is observable in the urgency of adopting the sustainability paradigm. The motivation for designing the strategies is linked to the urgency exemplified in this study.

In pursuit of this aim, the research is undertaken to build upon the discussion concerning 'student relationship management (SRM)' due to its approach and philosophy. The theme of SRM, which was coined by (Hilbert *et al.*, 2007; Ackerman and Schibrowsky, 2007) and emerged from the customer relationship management (CRM) system, has established itself as a new window for research. It constitutes a

strategic orientation for maximizing the student value through meeting the students' needs as well as for advancing the institutional sustainability through sustainable relationships development. While the significance of implementing an effective SRM has been stressed in the universities that are the academic powerhouse in creating the needed human capital to support sustainable development, there is insufficient empirical and theoretical research. To date, no previous studies have explicitly and systematically addressed a specific model of SRM, and, to be more exact, no systematic efforts have been made to develop a valid standard scale of it. It seems relatively small and in need of clarification, conceptualization, and operationalization to ensure that our knowledge of SRM develops in a cumulative manner. So as to narrow this gap, the research has attempted to make a valuable contribution theoretically and empirically.

The theoretical contribution of this study is according to a two-tier strategic analysis. Firstly, to examine the nature of CRM and present a clear conceptualization based on a holistic perspective, which reflects a co-creation process to achieve a maximum of value across the lifecycle of relationship. Secondly, to develop the current literature of SRM base on a student-as-customer perspective, which reveals an integrated framework to realize how the CRM system can be applied to the actionable SRM strategy. The result of this analysis is to meet the first objective of the research.

Following the theoretical contribution, the research develops the empirical evidence to meet the rest of the research objectives. Consequently, a new theoretical and practical knowledge of the SRM's guiding principle is comprehensively presented. This knowledge contributes a helpful reference to narrow the existing gap.

From the methodological point of view, this research has provided the FA-ISM-SEM synergistic integrative framework – a multi-methods framework of factor analysis (FA), interpretative structural modeling (ISM), and structural equation modeling (SEM) that can contribute to the modeling process in future research agenda, as elaborated further in the subsequent chapter.

1.8   Thesis Structure

This thesis consists of 6 chapters. Chapter 1 has provided a foundation for the thesis. It begins with a critical overview of the current study, then a presentation of the research background and problems. At its core, it indicates the research objectives and questions, which followed by highlighting the research significance and contributions.

Chapter 2 presents the literature study consisting of a review of keywords. It provides insight into the specific domains of research background, then it proceeds with providing a holistic perspective, making preparations to clarify the theoretical framework. This leads to formulating the study's objectives, indicating why and how the SRM strategy has been adopted for developing sustainability in higher education institutions. A literature review on the methodological framework (the research methods) has succinctly been outlined.

Chapter 3 demonstrates a synergistic framework for integration of the research methods for the sake of the study's objectives. It provides the detailed view of specific platforms for the methodological framework, which can contribute to the modeling process in future research agenda. The research methods contained in the methodological framework were to be accomplished through six steps and in three sections. In the first section, the focus is on creating an initial factorial structure of the SRM strategy using factor analysis. Next, developing the structure through interpretive structural modeling; and, finally, testing the developed model using structural equation modeling have been concentrated in this chapter as the methodological approach.

Chapter 4 reveals the results and findings obtained by data analysis according to the methodological framework of the research step by step.

Chapter 5 describes an integrative discussion of the research results and findings, providing a deeper understanding of the thesis statements.

Chapter 6 outlines the final conclusions and recommendations for future research.

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