



How to Make Higher Education Institutions Innovative: An Application of Market Orientation Practices

Sathana Vaikunthavasan^a, Charles Jebarajakirthy^b, and Amit Shankar^c

^aDepartment of Marketing, Faculty of Management Studies and Commerce, University of Jaffna, Jaffna, Sri Lanka; ^bDepartment of Marketing, Griffith Business School, Gold Coast Campus, Griffith University, Brisbane, QLD, Australia; ^cVinod Gupta School of Management, Indian Institute of Technology Kharagpur, Kharagpur, West Bengal, India

ABSTRACT

In the present era, higher education is considered a booming and significantly contributing sector to the economy of many countries. Due to the intense competition prevailing in the higher education sector, higher education institutions need to become market oriented and innovate in courses, delivery methods and student support services. Consequently, they could meet increasing expectations placed on them for quality of education and support services. The main aim of this study is to investigate the influence of both market orientation and its dimensions, on innovation in higher education institutions. This study also considered the age of the faculty a moderator to these influences. The sample comprised 270 managers and course coordinators attached to faculties, schools or units in Sri Lankan higher education institutions. The surveys were administered for data collection. The study has several contributions to the literature- all the three dimensions of market orientation, significantly and positively influenced innovation in higher education institutions. The age of the faculty significantly moderated the influence of both market orientation and its dimensions (Intelligence Generation and Responsiveness), on innovation. This study also expand the focus of theory of six sigma by applying it from market orientation and customer orientation perspectives. Finally, this study has modified items measuring several constructs to suit the higher education context which can be used by future researchers. From the findings, several practical implications are given to officials in higher education institutions for innovating in courses, delivery methods and support services. The article concludes with many useful directions for future researchers.

KEYWORDS

Age of the faculty; dimensions of market orientation; higher education institutions; innovation; market orientation

Introduction

The concept of “Market Orientation” was derived from “Marketing Concept” and refers to business culture that enhances business performance by creating superior value to customers (Slater & Narver, 2000). Market orientation focuses on the generation and dissemination of market intelligence

CONTACT Amit Shankar ✉ amitshankar@iitkgp.ac.in 📠 Vinod Gupta School of Management, Indian Institute of Technology Kharagpur, West Bengal, India.

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pertaining to customers, and on the response to this intelligence (Kohli, Jaworski, & Kumar, 1993). Such a focus can allow organizations to increase their overall performance, and ultimately, to achieve competitive advantage over rivals (Jaworski & Kohli, 1993). By being market oriented, a firm can make their existing customers satisfied and loyal, attract new customers, accomplish the desired level of growth and market share, and consequently, achieve the satisfactory levels of business performance (Tsotsou, 2010).

Market orientation also drives innovation in organizations. Market oriented firms tend to innovate, develop and modify products and services to satisfy the expectations and preferences of their customers (Brettel, Oswald, & Flatten, 2012; Ge & Ding, 2005). Not only do market oriented firms respond to the existing needs of their customers, but often anticipate future trends and develop an idea, product or service rapidly and effectively that allow them to satisfy customers' future demand. It has therefore been suggested that market oriented culture fosters innovativeness in organizations which in turn positively influences business performance (Brettel et al., 2012).

Consumers often perceive innovation as something that adds value to a company and its products. Rational customers are willing to pay more for well-designed, novel and innovative products and services (Han, Hansen, Panwar, Hamner, & Orozco, 2013). Innovation helps exploit both the existing business opportunities and those which can emerge in the future. Because markets, technologies and trends are rapidly changing, innovation is considered the prime driver that helps firms stay ahead of their rivals (Samuelsson and Davidson 2009). Innovation plays a main role in enhancing business performance, so designing an innovation strategy poses a challenge for any company (Ihinmoyan & Akinyele, 2011). Organizations should therefore constantly innovate in every aspect of their business operations, so that they can compete and survive in the competitive market place.

The market orientation-innovativeness link was first examined in production firms during 1990s. Since then market orientation philosophy has been embraced by various service sector entities, including healthcare (White, Thompson, & Patel, 2001), retail banking (Papasolomou-Doukakis, 2002; Pirithiviraj & Kajendra, 2010), tourism (Qu, 2014; Qu, Ennew, & Sinclair, 2005), and microcredit institutions (Jebarajakirthy, Thaichon, & Yoganathan, 2015), among others. Chad, Kyriazis, and Motion (2013) articulates that non for profit and public sector organizations also adopt market orientation practices in the recent years. It can therefore be suggested that market orientation can drive innovation in service entities and public sector institutions.

In this respect, given the quickly changing nature of teaching and learning system in higher education institutions, it can be suggested that market orientation practices might encourage innovativeness there. In the

last few decades, the higher education sector has become highly competitive, and expectations placed on higher education institutions for quality of service are ever-rising. It is therefore important that these institutions adopt market orientation practices, which will enable them to satisfactorily meet the service quality expectations of their intangible offerings (Greenwald, 1991). As higher education institutions continue to progress in a number of criteria, they need to develop innovative solutions in response to changing expectations placed on them (Ratnaweera, 2014). This suggests that higher education institutions should foster innovation. That is, they should develop their potential of being rich in design, and the capacity of delivery anywhere and at any time, and should be fully customizable to individual student's personalized learning style (Zemsky & Massy, 2004).

The preceding argument suggests that there may be a relationship between market orientation and innovation in higher education institutions. However, to date this relationship has not been empirically investigated, which is a gap in the literature. Therefore, the main aim of this study is to examine the influence of market orientation on innovation in higher education institutions. This study will have useful implications for theory as well as for the practice. The findings of this study make several contributions to the literature relating to services marketing, market orientation and innovation, in particular to the literature relating to those areas in the context of universities and other higher education institutions. Firstly, the findings of the study will illustrate whether market orientation drive innovativeness in higher education institutions. This study examines market orientation as a whole construct and then examines it at the individual dimensions level, demonstrating which specific dimensions drive innovation in higher education sector. The second contribution of this study is the inclusion of age of the unit (i.e., unit/faculty or school) as the moderator in the model, which demonstrates how the association between market orientation and innovation as well as the association between the dimensions of market orientation and innovation differ across mature and young faculties/schools/units. Thirdly, we have used the theory of six sigma to demonstrate a link between market orientation and innovation, and the link between dimensions of market orientation and innovation. The detailed explanation of the theory of six sigma and how this theory provides the link between the concepts is given in the literature review section.

Practically, the findings of this study will be useful in enhancing the innovativeness of the services and courses provided by universities and other higher education institutions by strengthening their market orientation practices. Additionally, this study would show the specific dimensions of market orientation (these dimensions will be discussed later) that need to be

strengthened for enhancing the quality and innovativeness of the services provided by higher education institutions.

Literature Review and Hypotheses Development

Market Orientation

Liu, Luo, and Shi (2002) characterize market orientation as a culture of the organization that requires customer satisfaction be put at the centre of business operations, which in turn can produce superior value for customers and outstanding performance for the firm. Customer needs and expectations evolve over time, and so delivering consistently high quality products and services, and responding to the changing needs of market, are important for the success of a business (Ihinmoyan & Akinyele, 2011). Many researchers including, Jaworski and Kohli (1993), Narver and Slater (1990), Ruekert (1992) and Deshpande and Farley (1998), remark that market orientation is the implementation of marketing concept.

Of the various definitions proposed for the concept of market orientation, those suggested by Kohli and Jaworski (1990) and Narver and Slater (1990) are considered seminal definitions (Lafferty & Hult, 2001). Kohli and Jaworski (1990) define market orientation as “the organization-wide generation of market intelligence pertaining to the current and future needs of customers, the dissemination of intelligence within an organization and responsiveness to it” (p. 6). Narver and Slater (1990) propose a slightly different definition. They define market orientation as “the organizational culture that most effectively and efficiently creates the necessary behaviours for the creation of superior value for buyers and thus superior performance for business” (p. 21). They suggest customer orientation, competitor orientation and inter-functional coordination, as the basic components of market orientation.

Several researchers have compared both these definitions and identified the strengths and weaknesses of each definition (Han et al., 2013; Lafferty & Hult, 2001; Martin & Grbac, 2003; Matsuno, Mentzer, & Ozsomer, 2002). Narver and Slater’s (1990) definition of market orientation proposes the cultural perspectives of market orientation (Niculescu, Xu, Hampton, & Peterson, 2013). That is, they consider customer orientation (customer oriented culture) and competitor orientation (competitor oriented culture) as the main dimensions of market orientation. Kohli and Jaworski’s (1990) definition suggests an action perspective of market orientation (Matsuno et al., 2002). They propose specific marketing activities and processes (i.e., intelligence generation, intelligence dissemination and responsiveness to intelligence) to be carried out by organizations, if they need to become market oriented (Lafferty & Hult, 2001). Kohli and Jaworski (1990) definition

provides clearer directions to organizations to become market oriented. Kohli and Jaworski (1990) definition places more emphasis on implementing both marketing concept and market oriented approach than creating a culture focusing on key stakeholders, such as customers and competitors. Chad and colleagues (2013) suggest successfully introducing and implementing market orientation involves overcoming several barriers. Therefore, implementing market orientation is more challenging than creating a culture supporting market orientation (Chad et al., 2013). Implementing market orientation requires a staged approach involving some processes (i.e., intelligence generation, intelligence dissemination and organization wide responsiveness) (Chad et al., 2013).

It is also important to note is in prevalent competitive and dynamic environment, it is not enough to consider only the customers and competitors (Lafferty & Hult, 2001). In addition to collecting information on customers and competitors, information needs to be generated regarding essential environmental factors, such as economy, socio culture and technology as well as regarding stakeholders other than customers. Collecting and disseminating this information is useful in innovatively designing products and services that can meet customers' expectations and preferences. Han and colleagues (2013) and Lafferty and Hult (2001) suggest these processes relating to market orientation (i.e., intelligence generation, intelligence dissemination and organization wide responsiveness) facilitate innovativeness in organization, which in turn positively influences business performance.

Innovation

Innovation simply means the perceived newness of the idea from the point of view of individuals (Ihinmoyan & Akinyele, 2011). Innovation can be anything relating to introducing a new product, process, technology, business system, business model, service or marketing activity (Han et al., 2013). Garcia and Calantone (2002) define innovativeness as "a measure of the degree of newness or novelty of a new product, service or idea" (p. 112). The degree of innovation relating to the market place could vary from incremental to radical (Samuelsson & Davidsson, 2009). Organization could enter into the market as pioneers by introducing a combination of new products, services, production methods, delivery methods, and raw materials. This is known as radical innovation. Alternative to this is incremental innovation. That is, providing goods and services that are, however, slightly similar to those which others have already supplied to the market.

Innovation helps exploit both the existing business opportunities and those which can emerge in the future. Customer needs are rapidly changing, so market oriented firms innovate products and services to satisfy their customers (Brettel et al., 2012). This suggests market oriented culture drives

innovation in firms. The following section presents theoretical support for the association between market orientation and innovation.

Underpinning Theory

The theory of Six Sigma which is a total quality improvement philosophy based on an integrated total quality approach, focuses on service innovation and continuous improvement (Chiarini, 2013; Mi Dahlgaard Park & Näslund, 2013). This theory suggests that organizations should be capable enough in successfully innovating, adopting and implementing a new idea, process or product (Hurley & Hult, 1998). Six Sigma decisions (i.e., decisions relating to innovation and improvement) start with a deeper understanding of customer requirements, competitor capabilities and market trends (McAdam, Davies, Keogh, & Finnegan, 2009). Six Sigma tools, such as the “voice of the customer” (VOC) and the “voice of the marketplace” (VOM), are closely related to customer orientation activities, which focus on gathering the data about customers, competitors and market trends (Belohalav, 1993). This theory postulates that customer oriented culture should be incorporated into business processes, methods and practices which will enable the continuous improvement and innovation of products and services (De Koning and De Mas, 2006; Douglas & Erwin, 2000). That is, total quality improvement and innovation practices should be supported by activities, such as collecting customer information, analyzing this information, and organization-wide learning and response based on this information (Creveling, Hambleton, & McCarthy, 2006). The theory of Six Sigma further posits that organizations can embrace innovation by prioritizing customer interests in overall strategic planning. The foregoing discussion indicates that based on the underpinnings of the theory of Six Sigma, there is a relationship between market orientation and innovation in organizations. This relationship is further discussed in the following section.

The Influence of Market Orientation on Innovativeness in Higher Education Institutions

Market orientation contributes to innovativeness in organization (Kirca, Jayachandran, & Bearden, 2005; Menguc & Auh, 2006). The changing nature of market gives rise to fresh ideas and innovative solutions, so market orientation is a main driver of successful innovations (Han et al., 2013). It has been suggested that the degree of market orientation determines the relative emphasis placed on new product development (Brettel et al., 2012; Ge & Ding, 2005; Slater & Narver, 2000). An improved capacity to innovate which is the number of new ideas adopted or implemented by the organization, enables firms to successfully respond to their customer expectations and

to gain competitive advantage. Lado and Maydeu-Olivares (2001) postulate that the magnitude and the effectiveness of the innovative activities of a firm can be enhanced through the adoption of market orientation principles, such as intelligence generation, intelligence dissemination and responsiveness.

During the last two decades, market orientation has been widely adopted by various service entities. In view of this, Niculescu and colleagues (2013) suggest that the higher education sector is a rapidly expanding service industry, and so adapting market orientation practices has many potential benefits for higher education institutions and will increase the performance of these institutions. It is also important to note that currently intense competition prevails in the higher education sector, and so service quality expectations placed on these institutions are on rise (Lai, Pai, Yang, & Lin, 2009). As a result, they become market oriented. As they become market oriented, they develop innovative solutions to enhance the teaching and learning experience of students. Also, in the present era, local and international ranking systems that are widely used to rank universities and other higher education institutions increasingly encourage innovation in courses and other services provided by them (Küster & Elena Avilés-Valenzuela, 2010). The preceding discussion indicates an association between market orientation and innovation in higher education institutions, and so the following hypothesis is formulated:

H₁: *Market orientation enhances innovativeness in higher education institutions.*

The Influence of Dimensions of Market Orientation on Innovativeness in Higher Education institutions

Kohli and Jaworski (1990) conceptualize market orientation as comprising three components: intelligence generation, intelligence dissemination and responsiveness. Intelligence generation is defined as “the organization-wide generation of market intelligence pertaining to customers’ current and future needs” (Kohli & Jaworski, 1990, p. 6). However, in recent times scholars suggest that, in addition to obtaining information on customers’ current and future needs, intelligence generation should involve monitoring competitors’ actions as well as analysing macro environmental factors, such as government regulations and technology, which can affect customer needs (Ahmed Zebal, and Goodwin 2012; Esteban, Millán, Molina, & Martín-Consuegra, 2002; Küster & Elena Avilés-Valenzuela, 2010). The next dimension is intelligence dissemination, which is the process and extent of exchanging market information within an organization (Aggarwal & Singh, 2004). Strategies and tactical marketing decisions should be made and executed inter-functionally. For this reason, the collected market information should

be disseminated across the different areas of the organization and across relevant SBUs both horizontally and vertically (Pantouvakis, 2014). The last element of market orientation is responsiveness to intelligence. Jaworski and Kohli (1993) postulate that responsiveness comprises the two main sets of activities: response design (e.g., using market information to develop plans) and response implementation (e.g., executing those plans). The participation and coordinated support of all the departments in an organization are important to respond effectively to customers' rapidly changing needs.

The above discussed dimensions of market orientation influence innovativeness. Intelligence generation is a main component of market orientation, which assists the organization in identifying customers' current and future needs, and changing environmental trends. This intelligence in turn encourages organizations to innovate products and services (Lam, Wong, & Lee, 2014; Niculescu et al., 2013). Similarly, identifying changing learning preferences and service expectations (e.g., expectations for faster and convenient admission system, career guidance, accommodation, library facilities, sports and recreation, health care and counseling) of both students and other stakeholders, and monitoring environmental factors affecting higher education institutions, will be of use to these institutions in designing course offerings and other services innovatively.

The next dimension of market orientation is intelligence dissemination. Sharing information on customer needs enhances a firm's capacity to innovate (Kibbeling, der Bij, & Weele, 2013). Disseminating market based information within organizations could contribute to anticipating customers' future needs, developing innovative plans and creative marketing ideas, and to fostering a corporate culture which can support innovation (Lado & Maydeu-Olivares, 2001; Lam et al., 2014). Similarly, the intelligence dissemination efforts of higher education institutions include organizing faculty board meetings and inter-departmental meetings, forming teams and committees for handling various issues, such as course development and industry engagement, and releasing periodic report within faculties and institutions about student satisfaction on course offerings and other services. These efforts would contribute to revising the curriculum periodically and to introducing changes to courses, delivery methods, and student support services.

The next dimension of market orientation is responsiveness to intelligence. By being responsive to market based intelligence, organizations could develop marketing strategies and make effective marketing decisions to implement innovative ideas (Udegbe Scholastica & Udegbe Maurice, 2013). That is, at the responsiveness stage, organizations are willing to adopt new and developmental ideas and commercialize them (Ihinmoyan & Akinyele, 2011; Modi, 2012). Similarly, in the context of higher education institutions, responsiveness would mean introducing new courses, revising the curriculum, making

periodic changes to services offered to students, and designing and implementing innovative and intensive promotional campaigns. The preceding discussion indicates that the three dimensions of market orientation influence innovativeness in higher education institutions. This discussion also suggests the relative degree of this influence may differ across the dimensions of market orientation. Therefore, the following hypotheses are formulated.

H_{2a}: *Information generation positively influences innovativeness in higher education institutions.*

H_{2b}: *Information dissemination positively influences innovativeness in higher education institutions.*

H_{2c}: *Responsiveness to intelligence positively influences innovativeness in higher education institutions.*

Moderating Role of the Age of the Faculty in the Association between Market Orientation and Innovation

Age of the firm, that is, the duration of the firm's existence, also determines its capacity to innovate products and services (Balasubramanian & Lee, 2008; Chad et al., 2013; Rosenbusch et al. 2011; Sørensen & Stuart, 2000). Age of the firm might moderate the influence of market orientation on innovation (Chad et al., 2013). Mature firms have specialized resources and in-depth understanding of the market, customers, competitors and environmental factors, so they can easily innovate products and services and respond to customer needs (Amit & Schoemaker, 1993; Balasubramanian & Lee, 2008; Huergo & Jaumandreu, 2004; Thornhill & Amit, 2003). Mature firms also have well established processes, structures, and feedback and reporting systems in place to disseminate information within organization. Such firms are also equipped with adequate resources, competencies, facilities, strategies and support systems as well as leadership arrangements to design and implement innovative ideas. It is also important to note that mature firms can increase investments in research and developmental activities that will enhance their capacity to innovate. The above discussion suggests the age of the firm might moderate the influence of both market orientation and its dimensions on innovative efforts.

The above relationship can also be true in the higher education sector and in the university contexts. Mature higher education institutions and faculties generally have reputation for their courses and research outputs. They retain reputed teachers and researchers, and maintain connections with industry partners and government. As a result, these faculties can understand the

changing expectations and preferences of students, industry partners and government regarding courses and other services, make sense of competitors' actions and environmental factors affecting the higher education industry; and accordingly innovate courses, programs, delivery methods and other support services (Voon, 2007). Mature institutions and faculties also have well established feedback and reporting systems, as well as committees (e.g., course development committees, program administration committees, student advisory committees, quality assurance committees and research committees) which assist in information dissemination across the faculty and institute, thereby facilitating innovation. Finally, mature higher education institutions and faculties have adequate resources, facilities and technical support to design and deliver new courses, such as industry relevant courses and online courses. They can also introduce changes and innovations to course delivery methods (e.g., introducing an online MBA program) and to student support and welfare services. From the foregoing discussion, it appears that the age of a faculty and the age of an institute would moderate the influence of both market orientation and its dimensions, on innovative efforts. Hence, the following hypotheses are formulated.

H₃: *Age of the faculty (or the school or unit) moderates the association between market orientation and innovativeness.*

H_{4a}: *Age of the faculty (or the school or unit) moderates the association between information generation and innovativeness.*

H_{4b}: *Age of the faculty (or the school or unit) moderates the association between information dissemination and innovativeness.*

H_{4c}: *Age of the faculty (or the school or unit) moderates the association between responsiveness to intelligence and innovativeness.*

Method

Sample and Survey Administration

The sample for this study comprised 270 managers (administrative officers) and course coordinators attached to various faculties, schools and units in Sri Lankan higher education institutions. Higher education institutions have different features from those found in the other types of business enterprise, that is, they heavily depend on a knowledge based culture (Niculescu et al., 2013). Similarly, there are differences between developed countries and developing countries in terms of marketing practices, customer attitudes

and responses towards products and services, and the design and implementation of marketing programs (Jebarajakirthy & Lobo, 2014; Tajeddini, Trueman, & Larsen, 2006). Most studies about market orientation have been carried out in developed countries, however market oriented practices and their role in enhancing innovation have not yet been investigated in developing countries, such as Sri Lanka (Ahmed Zebal and Goodwin 2012). Higher education institutions significantly contribute to Sri Lankan national income, and in the recent past, educational institutes, including private universities continue to mushroom in every city and town in Sri Lanka (Central Bank of Sri Lanka, 2012). Due to the above stated economic importance and intense competition, being market oriented and innovative in course designs, delivery methods and student support services, are of at most importance to Sri Lankan higher education institutions (Hampton, Wolfe, Albinsson, & McQuitty, 2009). Hence, Sri Lankan higher education institutions seem an appropriate setting for investigating market orientation and innovation practices.

A paper-based survey questionnaire was used to collect the data from the sample managers (administrative officers) and course coordinators. Participants were the managers (those who were in charge of the administrative functions of the unit) or course coordinators in the faculties, schools or units of higher education campuses operating in Sri Lanka which includes campuses belonging to both government and private higher education institutions. Faculties, schools or units in higher education institutions are unlikely to have separate functional managers or course coordinators in charge of marketing and innovation activities. However, it was ensured that the respondents (the managers/course coordinators) had sound understanding of the marketing and innovation practices of their faculty, school, or unit. Participants were approached within the premises of institution. Participants received information on the purpose of the survey, and they were assured of their anonymity. 270 paper-based surveys were distributed; 236 surveys were returned. Of these, 15 surveys had missing data, and so were discarded.

Of the responded faculties, schools or units, 16.2% had less than 25 academic staff, 33.6% had between 26 and 60 academic staff, 31.5% had between 61 and 120 academic staff, 11% had 121–160 staff and the remaining had above 160 staff. In terms of the number of years in operation (age), 14.2% were less than 10 years old, 34.8% were between 10 and 15 years old, 28.8% were between 16 and 20 years old, 12.1% were between 21 and 30 years old, and the rest were in existence for over 30 years. Finally, in regards to the number of students studying, 20.7% of the responded faculties, schools or units had less than 750 students, 31.2% had in between 751 and 1250 students, 27.9% had between 1251 and 2500 students, 11.3% had between 2501 and 3500 students, and the rest had above 3500 students. An independent samples *t*-test showed that there was no significant difference between

early and late respondents either in regards to the profiles of the responded units or study constructs. This also indicates the absence of non-response bias.

Measures and Instrument Development

A paper-based survey instrument was designed from previously validated scales; however, these scales were modified to suit the context of higher education institutions, where appropriate. The measures of the three dimensions of Market Orientation; Intelligence Generation, Intelligence Dissemination and Responsiveness to Intelligence, were obtained from Kohli and Jaworski (1990) and Niculescu and colleagues (2013). This means that, Intelligence Generation was operationalized using seven items, Intelligence Dissemination using eight items and Responsiveness to Intelligence using seven items. Innovativeness was measured using the Perceived Organizational Innovativeness Scale developed by Gamal, Salah, and Elrayyes (2011). Innovativeness comprises four dimensions; product innovativeness, process innovativeness, organizational innovativeness, and market innovativeness. Five items each were used to operationalize each of the four dimensions of innovativeness. Previous studies suggest the size of the firm and managerial encouragement to take risk can also influence firms' innovativeness, so they were controlled in this study (Im, Hussain, & Sengupta, 2008; Nasution, Mavondo, Matanda, & Ndubisi, 2011; Zhou, Brown, & Dev, 2009). Although the size of the firm is conventionally measured by the number of employees (Nasution et al., 2011; Zhou et al., 2009), the size of a faculty can be measured in terms of both the number of academic staff and the number of students. Hence, the number of academic staff, the number of students and managerial encouragement to take risk, were controlled in this study. The data about these control variables were also sought through this survey instrument. The three items operationalizing managerial encouragement to take risk were adapted from Im and colleagues (2008). The items operationalizing all the constructs, except the profile variables of the faculty, were measured using a 7-point Likert-type scale, where 1 = "strongly disagree" and 7 = "strongly agree."

To ensure content validity, the survey instrument was vetted by seven academics with expertise in the discipline of Marketing. The survey instrument was written in English. The respondents were the managers of the faculty, who had proficiency in English language, so they were capable of reading and understanding the survey written in English language. The survey instrument was pre-tested using two focus groups, each comprising eight managers of faculties or schools of higher education institutions. Based on their feedback, some minor changes were incorporated into the wording and format of the survey instrument.

Analysis and Results

Measurement Model

All items were subjected to Explorative Factor Analyses (EFA) using Principal Component Analysis with Varimax Rotation to confirm the dimensionality of the items measuring the constructs. During this process, items with communality value less than .5, factor loading less than .5 (Sharabati, Naji Jawad, & Bontis, 2010) and cross loading above .4 across factors, were deleted until clean factors emerged. An examination of the factor solution shows, of the items operationalising Market Orientation, one item each for Intelligence Generation and for Responsiveness to intelligence, and two for Intelligence Dissemination, cross loaded, and so were deleted from further analysis. Similarly, of the items operationalising Innovativeness, one item each for product innovativeness, process innovativeness, organizational innovativeness and market innovativeness, were deleted due to cross loading above .40. A final factor model was subsequently estimated with eigenvalues higher than 1.0. None of the items exhibited low factor loadings ($< .50$) or high cross-loadings ($> .40$). Out of 22 items of Market Orientation, 18 items were retained across the three dimensions, namely Intelligence Generation, Intelligence Dissemination and Responsiveness to Intelligence. In innovativeness, 16 items were retained out of 20 items under four dimensions that included product innovativeness, process innovativeness, organizational innovativeness and market innovativeness. All the items measuring managerial encouragement to take risk were retained under the single dimension.

Following EFA, Confirmatory Factor Analysis (CFA) was performed to test the measurement properties of all the constructs. First and second order CFA seemed appropriate to determine the dimensionality, reliability and validity of all the study constructs. Intelligence Generation, Intelligence Dissemination and Responsiveness to Intelligence were considered first-order constructs, whereas Innovativeness was regarded as a second-order construct, which consists of four dimensions. In arriving at the final set of items for each construct, four items were deleted based on item to total correlations and the standardized residual values (Byrne, 2009) (one item each from Intelligence Generation, Intelligence Dissemination, Responsiveness to Intelligence and from Innovativeness, i.e., one from organizational innovativeness). The deleted items were examined and compared with the original conceptual definitions of the constructs. In each case, deleting the items did not significantly change the make-up of the construct as initially conceptualized. The resulting pool of items was subsequently subjected to CFA. A completely standardized solution produced by AMOS version 21 using the maximum likelihood method shows that all the remaining items load highly on their corresponding factors, confirming the

unidimensionality of the constructs and providing the strong empirical evidence of their validity.

The results of the CFA are presented in [Table 1](#). The CFA results showed that the factor loadings of all the constructs were significant ($p < .01$) and above .5, the minimum threshold value, and the Average Variance Extracted (AVE) values of all the constructs were also above .5, both of which are indicative of the convergent validity of measures (Hair, Black, Babin, Anderson, & Tatham, 2010). The discriminant validity of the study constructs was tested as suggested by Fornell and Larcker (1981). Thus, the square root of the AVE values presented in the upper diagonal of [Table 2](#) for each construct, were greater than the constructs' correlation coefficients with other constructs. This is indicative of discriminant validity among constructs (Fornell & Larcker, 1981). In addition, Cronbach's Alpha coefficients of each construct presented in [Table 1](#), were above .7, indicating the reliability of constructs' measures.

[Table 2](#) presents the mean, standard deviation and correlations for the study constructs. The results show that the majority of the constructs are significantly correlated with each other as correlation regressions range from $-.05$ to $.57$. However, all correlations are less than .9, suggesting there is no multicollinearity between these constructs (Tabachnick & Fidell, 2006).

Common Method Bias

Because the data relating to both independent and dependent constructs were collected from the same respondents, a common method bias may occur. This potential problem was checked with the Harman one-factor test (Podsakoff & Organ, 1986). A factor analysis of eight focal constructs resulted in an eight-factor solution, which accounted for 78.56% of the total variance; and factor one accounted for 18.25% of the variance. Because a single factor did not emerge and factor one did not explain most of the variance, common method bias is unlikely to be a concern in this data. Single latent factor model was also used to detect common method bias. If common method bias poses a threat, a single latent factor model should yield a better fit than the multifactor model (model proposed for the study based on the theory) (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003). The comparison of the single latent factor model with the eight-factor model showed that a common factor bias was not a serious threat. The fit of the single latent factor model is unacceptable and significantly worse ($\chi^2 = 1064.76$; $df = 467$; $\chi^2/df = 2.28$; CFI = .86, GFI = .88, NFI = .85, TLI = .85, RMSEA = .058, SRMR = .055, $\Delta\chi^2 = 235.16$; $\Delta df = 33$; $p \leq .001$) than that of the multidimensional model (model proposed for the study based on the theory).

Table 1. Summary of the measurement model.

Construct	Statements	FL
Intelligence generation AVE (.64), CR (.87), α = .85	We regularly identify students' course preferences	.58
	We survey students at least once a semester to assess the quality of courses and support services	.78
	We regularly and closely monitor environmental factors affecting our faculty (e.g. competition, technology, regulation etc.)	.80
	We periodically review how environmental changes affect our students and their course preferences (e.g. government rules, job market and technological changes etc.)	.80
Intelligence dissemination AVE (.61), CR (.83), α = .81	We do several in-house marketing research studies regarding our course offerings (e.g. strength and weakness analysis)	.69
	We organise interdepartmental meetings periodically where we discuss about market trends and developments	.64
	Academic staff, program coordinators and program directors spend time in discussing about the needs of the institution, faculty and students, with other staff in the faculty	.77
	Data on student satisfaction feedback are disseminated at all levels of this faculty on a regular basis	.76
Responsiveness to intelligence AVE (.58), CR(.74), α = .73	We periodically review our course development efforts to ensure they are in line with students' expectations and preferences	.56
	When something important happens to a student or course, the entire faculty knows about it within a short period of time	.65
	If we came up with a new course initiative, we probably would be able to implement it in a timely fashion.	.75
	Several faculty staff members get together periodically to plan a response to changes taking place in our environment.	.66
Managerial encouragement to take risk AVE (.58), CR(.74), α = .71	If another institution were to launch an intensive campaign targeted at our student market, we would implement a response immediately (e.g. internship training, workshops etc.)	.52
	The activities of the different departments in our faculty are well coordinated to respond quickly enough to necessary changes	.51
	When we find that students expect us to modify a service, the relevant departments make concerted efforts to do so.	.67
	Top management team of our faculty expects academic staff to take risks when they propose new ideas for new course offerings and curriculum revision	.84
Innovativeness Product AVE (.71), CR(.85), (.77), α = .84 α = .76	Top management team of our faculty believes that higher financial risks involved in introducing new courses and in revising the curriculum, are worth taking for higher rewards	.77
	Top management team of our faculty encourages the development of innovative marketing strategies, knowing well that some will fail	.51
	During the last few years, newly and significantly improved support services have been introduced to enhance the quality of our faculty programs	.61
	During the last few years, new machinery, equipment and software, have been purchased in our faculty to improve the quality of our programs	.77
Our faculty frequently tries out new ideas to improve the standard of programs	During the last few years, several new ideas have been tried out to improve the program quality (e.g. curriculum revision, new assignments, training etc.)	.56
		.51

(Continued)

Table 1. (Continued).

Construct	Statements	FL
Process AVE (.66), CR (.75), $\alpha = .74$	New and significantly improved logistics and learning methods have been introduced in this faculty	.75
	Our faculty has collaborated with other institutions, such as other higher education institutions or professional institutes, to innovate new programs	.73
Organizational AVE (.78), CR (.79), $\alpha = .78$	New and significantly improved knowledge management systems have been introduced to the programs offered by the faculty	.67
	We introduce new operational procedures and are creative in the way in which we operate	.51
	Our faculty has periodically introduced changes to the management structure	.84
	Our faculty is committed to improving decision making and internal communication	.93
Market AVE (.75), CR (.74), $\alpha = .73$	The technology used to deliver our programs has been improved	.84
	New or significantly revised learning methods have been introduced, such as e-library, web seminars and online discussion forum, etc.	.65
	to the programs offered by our faculty	
	Marketing activities, such as marketing research, advertising and other promotional activities, are carried out for the programs offered by our faculty	.74
	Student-orientation programs for our faculty courses have been improved	.63
	We respond quickly enough to necessary changes	.52

Notes: Fit indices χ^2 (481) = 880.85, ($p < .001$), CFI = .95, GFI = .95, NFI = .97, TLI = .96, RMSEA = .038, SRMR = .040. FL-Factor Loading, Cronbach's Alpha, CR- Construct reliability, AVE = Average variance extracted, CFI = comparative fit index; GFI = goodness-of-fit index, NFI = normed fit index, TLI = Tucker-Lewis index, RMSEA = root mean square error of approximation, SRMR = standardized root mean residual.

Table 2. Descriptive statistics and correlation matrix for the study.

Variable	Mean	SD	1	2	3	4	5	6	7	8
1. Intelligence generation	4.71	1.45	.80 ^a							
2. Intelligence dissemination	4.74	1.39	.57**	.78 ^a						
3. Responsiveness to intelligence	4.25	1.32	.58**	.43**	.76 ^a					
4. Risk taking	4.76	1.54	.20**	.36**	.48**	.76 ^a				
5. Innovativeness	4.06	1.04	.37**	.45**	.57**	.17**	.84 ^a			
6. No of years ^b	2.82	1.01	.20**	.04	.23**	.05	.21**	-		
7. No of students ^c	2.62	1.04	.12*	.11*	.09*	-.05	.10*	.35**	-	
8. No of academics ^d	2.25	1.25	.02	.10*	.01	.03	.04	.22**	.20**	-

Notes: **Correlation is significant at $p < .01$, *Correlation is significant at $p < .05$.

^aDiagonal value indicates the square root of AVE of individual latent construct.

^b1 = less than 10 years, 2 = 10–15 years, 3 = 16–20 years, 4 = 21–30 years, 5 = > 30 years.

^c1 = less than 750, 2 = 751–1250, 3 = 1251–2500, 4 = 2501–3500, 5 = > 3500.

^d1 = less than 30, 2 = 31–100, 3 = 101–150, 4 = 151–200, 5 = > 200.

Hypothesis Testing

Two multiple regression analyses were run to test hypotheses, except those relating to moderation effects. The first was run to test the influence of Market Orientation on Innovativeness, and the second to examine the influence of the dimensions of Market Orientation on Innovativeness. In both analyses, VIF values were below the cutoff value of 5.0, indicating the absence of multicollinearity in the models. The results of the first multiple regression analysis are presented in Table 3. In this analysis, both Market Orientation and Innovativeness were considered second order factors with summated first-order indicators. The results in Table 3 show that the model, along with the control variables, explained 67.9% variance in Innovativeness. Market Orientation ($\beta = .58$, $p < .001$) had significant positive influences on Innovativeness. Hence, H_1 was accepted.

The results of the second multiple regression analysis are presented in Table 4. In this analysis, only Innovativeness was considered second order dependent factor with summated first-order indicators. The results in Table 4 show that the three dimensions of Market Orientation, along with the control variables explained 68.6% of the variance in Innovativeness. Of these dimensions, Intelligence Generation ($\beta = .36$, $p < .001$), Intelligence Dissemination ($\beta = .42$, $p < .001$) and Responsiveness to Intelligence ($\beta = .53$, $p < .001$), had

Table 3. The results of hypothesis testing (MO on Innovativeness).

Proposed Hypothesis	Coefficient (β)	t-value	Conclusion
The effects of MO on Innovativeness			
MO $\rightarrow$ Innovativeness	.58	25.83***	H_1 -Accepted
Control Variables			
Risk taking $\rightarrow$ Innovativeness	.12	5.67*	significant
No of students $\rightarrow$ Innovativeness	.09	4.59*	significant
No of academics $\rightarrow$ Innovativeness	.04	1.93 ^{ns}	Non-significant

Notes: MO = Market Orientation; $R^2 = .683$; adjusted $R^2 = .679$; F-value = 224.273***.

*** $p < .001$; ** $p < .01$; * $p < .05$; ns = not significant.

Table 4. The results of hypothesis testing (the dimensions of MO on Innovativeness).

Proposed Hypothesis	Coefficient (β)	t-value	Conclusion
<i>The effects of the Dimensions of MO on Innovativeness</i>			
Intelligence generation $\rightarrow$ Innovativeness	.36	14.26***	H_{2a} -Accepted
Intelligence dissemination $\rightarrow$ Innovativeness	.42	17.49***	H_{2b} -Accepted
Responsiveness $\rightarrow$ Innovativeness	.53	24.83***	H_{2c} -Accepted
<i>Control Variables</i>			
Risk taking $\rightarrow$ Innovativeness	.11	5.35*	significant
No of students $\rightarrow$ Innovativeness	.09	4.47*	significant
No of academics $\rightarrow$ Innovativeness	.04	1.87 ^{ns}	Non-significant

Notes: $R^2 = .698$; adjusted $R^2 = .686$; F-value = 176.446***.

*** $p < .001$; ** $p < .01$; * $p < .05$; ns = not significant.

significant positive influences on Innovativeness. Hence, **H_{2a}**, **H_{2b}**, and **H_{2c}** were all accepted.

Testing for Moderation Effects

To test the moderating effects of Age of the Faculty on the association between both market orientation and innovativeness, and that between the dimensions of market orientation and innovativeness, a multi-group path analysis modelling was employed following Hair and colleagues (2010). That is, the sample should be divided into two groups based on low and high conditions, and each path should be compared at the different levels of moderating variable. Data were divided into two sub-sets based on the mean age of the faculty. The sample above the mean represents the mature faculty group ($n = 78$), and the sample below the mean represents young faculty group ($n = 143$).

Prior to running multigroup path analysis, the model needs to be tested for invariance across groups under comparison. That is, it should be tested whether the components of the measurement model are equivalent across the groups (Steenkamp & Baumgartner, 1998). Comparing unconstrained configural model ($\chi^2 = 1761.76$; $df = 962$; $\chi^2/df = 1.83$; CFI = .95, GFI = .95, NFI = .97, TLI = .96, RMSEA = .038, SRMR = .040) with the partially constrained model ($\chi^2 = 1790.05$; $df = 981$; $\chi^2/df = 1.82$; CFI = .95, GFI = .95, NFI = .96, TLI = .95, RMSEA = .037, SRMR = .039) resulted in the insignificant chi-square difference ($\Delta\chi^2 = 28.29$, $p > .05$) which suggests measurement model is invariant between mature and young faculties.

Subsequently, multi-group analysis was performed to test moderating hypotheses. Under this technique, first a fully unconstrained model was estimated in which all paths were set free across both groups. Then, a constrained model was estimated in which the path under investigation was constrained to be equal between the groups. Path estimates of interest are significantly different if the fit of the constrained model differs

significantly (i.e., a significant increase in chi-square) compared with that of unconstrained model. The results of this test are presented in Table 5.

Chi-square difference between the unconstrained model and the model constrained for the Path, Market Orientation- Innovativeness was significant ($\Delta\chi^2 = 7.35, p < .01$), meaning that age of the faculty significantly moderates the association between Market Orientation and Innovativeness. Mature faculties ($\beta = .53, p < .001$) showed a stronger association between Market Orientation and Innovativeness than young faculties ($\beta = .33, p < .01$). So, H_3 was accepted. This moderator effect is depicted in Figure 1. In regards to the moderating effects of the age of the faculty on the association between the components of market orientation and innovativeness, the results showed that Chi-square difference between the unconstrained model and the constrained model for the association between Intelligence generation and

Table 5. Results for the moderating effects of age of the faculty.

Paths	Unconstrained χ^2 (d.f.)	Constrained χ^2 (d.f.)	$\Delta \chi^2$ (p-value)	Standardized (β)	
				Mature	Young
MO $\rightarrow$ Innovativeness	23.4 (12)	30.75 (13)	7.35(.007)	.53***	.33**
Intelligence generation $\rightarrow$ Innovativeness	44.7(24)	52.35 (25)	7.65(.004)	.45***	.31**
Intelligence dissemination $\rightarrow$ Innovativeness	44.7(24)	46.18 (25)	1.48(.224)	.45***	.42***
Responsiveness $\rightarrow$ Innovativeness	44.7(24)	54.34 (25)	9.64(.002)	.59***	.31**

*** $p < .001$; ** $p < .01$; ns = not significant.

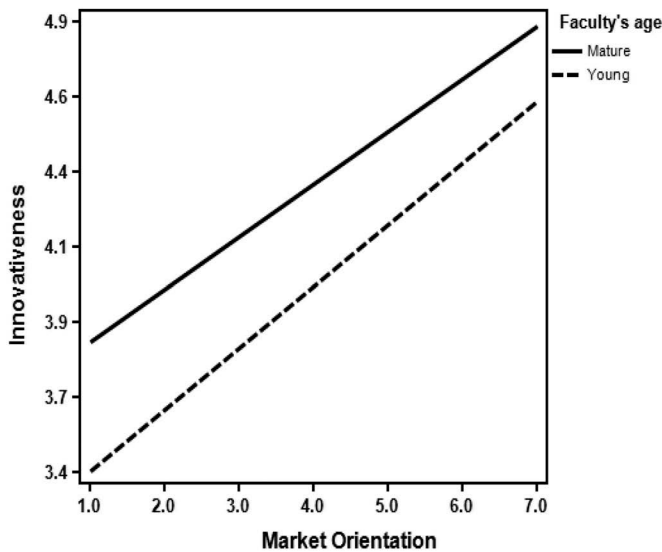


Figure 1. Moderator effects of faculty's age on market orientation–Innovativeness.

Innovativeness was significant ($\Delta\chi^2 = 7.65, p < .01$), hence age of the faculty significantly moderates this association. As the Figure 2 illustrates, the mature faculties ($\beta = .45, p < .001$) had a much stronger positive influence of Intelligence generation on their Innovativeness than the young faculties ($\beta = .31, p < .01$). Thus, H_{4a} was accepted. However, the moderating effect of age of the faculty on the association between Intelligence dissemination and Innovativeness was not significant, as suggested by the insignificant Chi-square difference ($\Delta\chi^2 = 1.48, p > .05$) between the unconstrained model and the constrained model for this path. The association between Intelligence dissemination and Innovativeness did not significantly differ between the mature faculties ($\beta = .45, p < .001$) and young faculties ($\beta = .42, p < .001$). So, H_{4b} was not accepted. Nevertheless, the results showed that chi-square difference between the unconstrained model and the constrained model for the association between Responsiveness to Intelligence and Innovativeness was significant ($\Delta\chi^2 = 9.64, p < .01$), hence the age of the faculty significantly moderates this association. The mature faculties ($\beta = .59, p < .001$) had a stronger association between Responsiveness to Intelligence and Innovativeness than young faculties ($\beta = .31, p < .01$). Thus, H_{4c} was accepted. This moderator influence is illustrated in Figure 3.

Discussion

The main aim of this study is to investigate the influence of market orientation on innovativeness in higher education institutions. The results showed

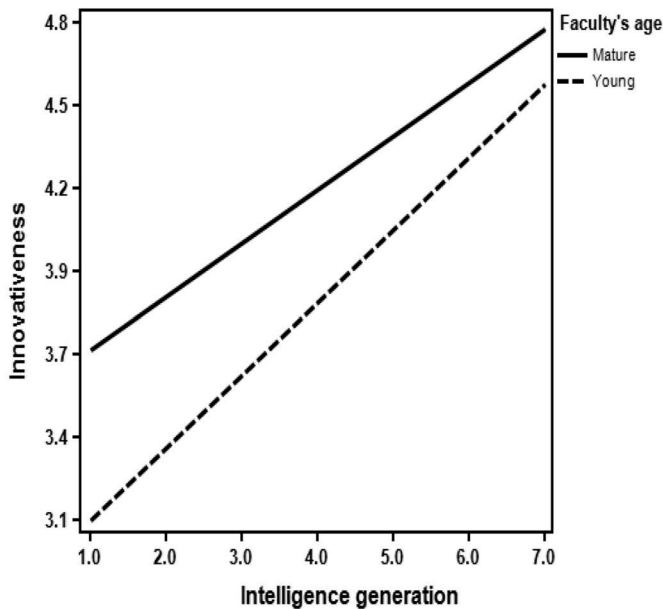


Figure 2. Moderator effects of faculty's age on intelligence generation–Innovativeness.

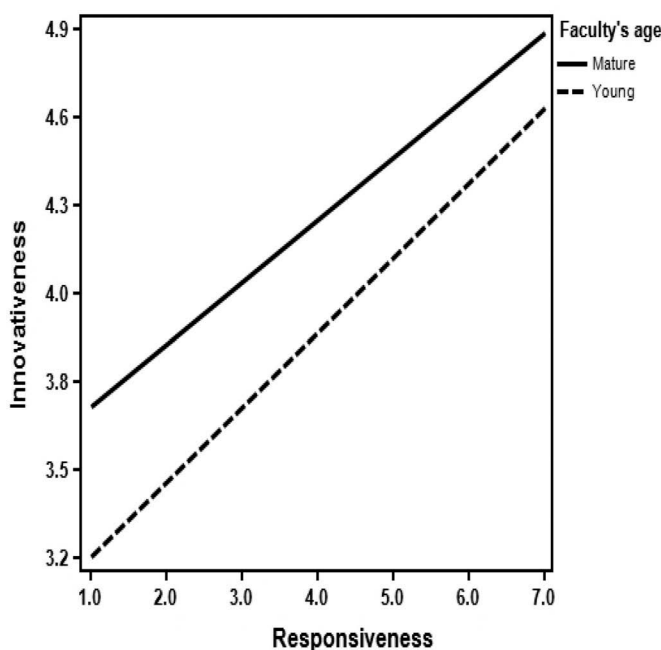


Figure 3. Moderator effects of faculty's age on responsiveness to intelligence–Innovativeness.

that market orientation ($\beta = .58^{***}$) has a significant positive influence on innovativeness in higher education institutions. This finding suggests market orientation practices adopted by faculties and higher education institutions enhance innovation in their teaching and learning activities, delivery methods, and in student support services. In the present era, higher education institutions become market oriented due to intense competition prevailing in the higher education sector and due to the rising expectations for both quality teaching and learning and for student support services. As they become market oriented, they develop innovative teaching and learning practices, redesign curriculum, introduce new technologies and delivery methods, and provide improved student support services.

This study also aims at investigating the influence of the dimensions of market orientation on innovativeness in higher education institutions. The findings show that intelligence generation ($\beta = .36^{***}$) had significant positive effects on innovativeness. This suggests the intelligence generation efforts of faculties and the institutes, such as the periodically reviewing students' course preferences and their satisfaction, monitoring environmental changes affecting higher education industry as well as performing in-house market research, contribute to providing both innovative teaching and learning solutions and greater student support services. This finding is similar to that reported in previous studies (Küster & Elena Avilés-Valenzuela, 2010; Pantouvakis, 2014).

Intelligence dissemination had ($\beta = .42^{***}$) significant positive effects on innovativeness in higher education institutions. This finding suggests organizing periodic interdepartmental meetings and faculty board meetings to discuss the issues, such as student course preferences, service expectations, market trends and developments, and forming committees to address these issues, as well as disseminating the findings of student satisfaction survey in an unidentifiable aggregated form, will all help innovate teaching and learning practices and provide quality student support services.

Responsiveness to intelligence ($\beta = .53^{***}$) had significant positive effects on innovativeness of higher education institutions. Of the dimensions of market orientation, responsiveness to intelligence had the greatest influence on innovativeness. This finding suggests that responding to marketing intelligence, that is, timely introducing new course initiatives, periodically making changes and improvements to courses and other services, timely responding to competitors' actions, and coordinating interdepartmental activities, will all improve innovativeness in higher education institutions. This argument is consistent with that in the previous studies (Niculescu et al., 2013; and O'Cass & Viet Ngo, 2007).

It was also hypothesized that the age of the faculty moderates the association between market orientation and innovativeness and the association between the dimensions of market orientation and innovativeness. The findings show that the influence of market orientation on innovativeness in mature faculties is significantly higher than that in young faculties. Mature faculties have better understanding of course preferences of students, more capable teachers and researchers and more resources, than young faculties all of which help the former innovate in courses and delivery methods and provide improved support services. The findings also showed that the influence of intelligence generation on innovativeness in mature faculties is stronger than in young faculties. This is because mature faculties have better understanding of various issues, including the course preferences and expectations of main stakeholders (e.g. students, industry partners and government), competitors' actions and environmental factors affecting the higher education industry, which help them innovate in course offerings, delivery methods and student support services. This argument is similar to that of Voon (2007). The influence of dissemination efforts on innovativeness did not differ significantly between mature and young faculties. This is possibly because forming committees, organizing interdepartmental meetings, and sharing student satisfaction feedback, can be done easily irrespective of the size of the faculty. The findings also show that the association between responsiveness to intelligence and innovativeness is stronger in mature faculties than in young faculties. This indicates mature faculties have more resources, more experienced teachers and researchers, and more technical

capabilities and facilities, to design and implement new courses, introduce new delivery methods and to provide improved support services.

Academic and Practical Implications

This study makes several academic contributions. This research, being the first of its kind, investigates the influence of market orientation on innovativeness in higher education institutions. It also shows that the dimensions of market orientation variably influence innovativeness in higher education institutions. Given the fact that higher education is a booming and economically contributing sector to many countries and the regions of the world, this study is required in the present era (Davis & Farrell, 2016). Hence, this study and its findings make a significant and a timely contribution to the literature relating to market orientation, innovation, public sector marketing and services marketing.

This study has attempted to link both market orientation and its components, with innovation using the underpinnings of the theory of Six Sigma. To date, this theory has been considered only a total quality management philosophy (Chiarini, 2013; Mi Dahlgaard Park & Näslund, 2013) which focus on the innovation and continuous improvement of services in organization. However, this study has articulated this theory also incorporates the elements of market orientation—intelligence generation, intelligence dissemination and responsiveness to intelligence—in order to achieve the objectives of innovation and continuous improvement of services. This theory can also be studied and applied from the perspectives of market orientation and customer orientation. Thus, we have expanded the argument and scope of this theory which is a contribution to the theory of Six Sigma.

It is also important to note this study has considered the age of the faculty a moderator for the influence of both market orientation and its dimensions, on innovation. The findings have shown the association between market orientation and innovation, as well as the association between the components of market orientation (intelligence generation and responsiveness to intelligence) and innovation significantly vary between mature and young faculties/school/units. Thus, the moderating role of age of the faculties/schools/units is supported by the findings of this study. Furthermore, this study and its findings can potentially be applied to investigate the same theoretical association in the other types of education institution, such as vocational training (TAFEs) and professional institutes. This study can also be replicated in the other service industries, such as insurance industry.

Another theoretical contribution is, as indicated in the section titled “Measures and Instrument Development,” this study has modified the items measuring market orientation, innovation and managerial encouragement to take risk, to suit higher education institutions. Although we designed

the items measuring these constructs from the previous studies, we slightly modified them to suit the higher education institutions, and reliability and validity of these measures have been confirmed through statistical analysis, and so future researchers can readily (without any further modification) apply these items to investigate market orientation, innovation and their dimensions in universities and the other types of higher education institution. In addition, the hypothesis relating to the moderation effects of age of the unit on the association between information dissemination and innovativeness has been rejected and the findings of this hypothesis are contradictory to the extant literature. In this context, this rejected hypothesis has been corroborated with the previous studies and its rejection has been thoroughly justified. These alternative explanations and justifications also contribute to knowledge. Finally, this study suggests many insightful directions for future researchers, which will make a useful contribution to knowledge in the future.

Besides contributing to theory, the findings of this study have several implications for the marketing activities of higher education institutions. In the present era in particular, intense competition prevails in the higher education sector, which encourages higher education institutions to seek ways and means of gaining competitive advantage in the sector (Davis & Farrell, 2016). Our study has suggested some insightful means of enhancing innovation in both course offerings and support services through adopting market orientation practices which in turn assist the higher education institutions to achieve the competitive edge in the industry. From the broader perspective, all the three dimensions of market orientation; intelligence generation, intelligence dissemination and responsiveness to intelligence enhance innovativeness, which suggests that strengthening and improving these areas in higher education institutions increase their innovativeness. Particularly of the dimensions, responding to intelligence is the main determinant of innovativeness. So if these institutions pay their focus on timely introducing changes to programs and delivery methods, effectively coordinating interdepartmental activities, and timely responding to competitors' actions, they will be able to maintain innovativeness. Intelligence generation also drives innovation in higher education institutions, so they need to organize period review of students' course preferences, monitor environmental factors and carry out in-house market research activities. Mature faculties can be more benefited by these intelligence generation and responsive measures.

Finally, intelligence dissemination also contributes to enhancing innovativeness. So, higher education institutions will be able to innovate in their courses, delivery methods and support services, if they organize departmental meetings at regular time intervals, form committees for addressing the issues facing the students, and share the findings of student satisfaction feedback.

Limitations and Directions for Future Research

This study was confined to higher education institutions in Sri Lanka. Hence, to better generalize the findings of this study, it needs to be replicated with higher education institutions in other countries, especially in other emerging and transitioning economies. Also, the data for this study was cross-sectional. However, due to rapid changes in the higher education sector, such as technological developments and competitive actions; market oriented and innovative practices adopted by these institutions would be likely to change overtime. This indicates that replicating this study with the longitudinal data could demonstrate more interesting results.

Another limitation in our study is the sample respondents. This study considered data collected only from managers (administrative officers)/course coordinators of the higher education institutions, however, academics, senior academics in particular, are also well aware of the market orientation practices and innovative methods adopted for course design and delivery. Therefore, getting their viewpoints will be of great value for the research, and will give multiple views relating to market orientation and innovation practices adopted by higher education institutions. We suggest that future researchers can overcome this limitation by collecting data from managers, course coordinators and senior academics thereby getting both managerial and academic views of their market orientation and innovation practices.

This study opens couple of avenues for further research. Firstly, from the theoretical perspective, we have articulated that the theory of six sigma incorporates the components of market orientation. Future researchers can apply the theory of six sigma for the studies relating to market orientation and customer orientation. Next, although innovation has dimensions, such as product innovation, process innovation, organizational innovation and market innovation, the effects of market orientation on these dimensions were not investigated in this study. This could be studied in future research, which will make a further contribution to the marketing literature.

Disclosure Statement

No potential conflict of interest was reported by the authors.

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