

從美國校務研究的角色探究台灣財務援助 政策對大學生學習成效之影響

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摘 要

研究目的

美國高等教育長期以來面臨學雜費不斷調漲及複雜的獎助學金政策，許多學者投注心力於此類財務援助如何影響大學生選校偏好及其學習成效相關研究上。此類型研究顯示出學術研究對於此類議題的研究興趣偏好，及其受到高教機構端的重視。本篇藉由檢視文獻中的明顯趨勢，顯示出高等教育研究與校務研究的結合，在政策、實務及學生行為上能提供新的視野，以提升大學校務專業管理，達成社會及大學目標。

研究設計／方法／取徑

本篇採用文獻分析方式，以校務研究的觀點，綜論評析美國和臺灣財務援助政策與學生學習成效之關係。

研究發現或結論

本篇文章係聚焦於分析校務研究中財務援助的研究，整體性地闡明校務研究如何協助臺灣高等教育機構達成其核心目標。研究結

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果顯示，財務援助在大學生學習表現上扮演重要的中介影響變項，並強調校務研究轉為實際行動後，對於實證導向的決策之重要性。

研究原創性／價值性

本文章雖然是個開端，其闡述臺灣在助學金政策、學生學習成效上有推動校務研究之需求。高等教育政策中，資源分配不均向來是主要的關注議題；植基於實徵研究的校務研究，在高等教育學習成效方面，可做為教育決策及校務執行之基石。

關鍵字：財務援助政策、校務研究、大學招生、高等教育

LEARNING FROM U.S. RESEARCH ON THE IMPACT OF FINANCIAL AID ON COLLEGE STUDENT OUTCOMES TO ADVANCE INSTITUTIONAL RESEARCH IN TAIWAN

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ABSTRACT

Purpose

Given higher education's long history of escalating fees and complex bursaries, scholars in the U.S. have produced a considerable body of sophisticated, theory-guided research regarding the impact of financial aid on student college choice and academic success. This research reflects a mix of broad academic interests as well as specific institutional considerations. In this paper, we review several trends evident in this literature as a way of demonstrating how higher education research and institutional research can work together to produce new insights into the policies, practices, and student behaviors that promote societal and institutional objectives.

Design/methodology/approach

The paper synthesizes the more representative and rigorous research on financial aid programs in relation to student success from an institutional research perspective. Studies included in this paper were conducted in the U.S. and Taiwan.

Findings

The present study critically reviews financial aid studies in institutional research and casts light, more generally, on how institutional research can assist Taiwanese higher education institutions

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in achieving their core mission objectives. Findings suggest that financial aid serves as a mediator for student success, emphasizing the importance of transforming IR into action for evidence-based decision making.

Originality/value

While this study provides a beginning, it underscores the need for further institutional research into the relationship between student aid and student success in Taiwan. The issue of educational disparities remains a major concern in higher education policy circles. Basing institutional policies on empirical research provides a necessary basis for policy-making and institutional practices in relation to student success in higher education.

Keywords: *financial aid, institutional research, college enrollment, postsecondary education*

Introduction

Higher education is widely considered the most viable mechanism for promoting the global knowledge economy while providing a social escalator for upward mobility regardless of ethnicity and socioeconomic status (SES). Access to higher education has therefore become a major issue in the 21st century. Impacted by the trend of globalization, higher education has moved from elite to mass access as a prerequisite for financial and social opportunities (Altbach, Berdahl, & Gumpert, 2016). As this trend continues, policy makers are committed to facilitating the pathways for students not only to access postsecondary education but also to have a reasonable chance of graduating (Lumina Foundation, 2009). This broadened concept has financial as well as academic implications around the globe.

The shift toward mass, and now more recently universal, higher education has been accompanied by a concurrent shift from viewing the outcomes of higher education as a public good, to a private good. With the tightening of public sector funds, and the focus on benefits for the individual related to employment outcomes, individual students and families have been assuming a larger portion of the cost of a college education. A major implication of shifting the cost burden of higher education to the consumer is the importance of student financial aid. The salient question is the extent to which increases in availability of financial aid minimize disparities in access and persistence among students from different socioeconomic status (SES) backgrounds. Given large government investments in financial aid for students in higher educational institutions, it is crucial to address this question. The purpose of this paper, therefore, is to examine perspectives on the relationship between student success and financial aid in the U.S. and Taiwan that have emerged in recent decades. Toward this end, this comparative analysis will be organized as follows. First, we review institutional research (IR) on financial aid in U.S. higher education to determine major perspectives in a globally dominant system. Second, we examine studies of financial aid in Taiwanese higher education and how it impacts college enrollment, focusing on the issue of minimizing educational disparities across different SES backgrounds. Third, we discuss the current status of administering IR in Taiwan, and fourth, we consider ways to apply lessons learned from IR in the U.S. to exploring issues related to financial aid, access and student success, as well as organizational improvement more generally, in Taiwanese higher education.

Policy Background in U.S. Higher Education

Title IV of the 1965 Higher Education Act created the federal financial aid system as the primary source of federal funding for higher educational institutions in the U.S. (Heller, 2011). Among fundamental changes in the financing of higher education over the last few decades in the U.S. as well as internationally, of particular importance is the increasingly critical role of financial aid to mitigate substantially rising higher educational costs (Johnston & Marcucci, 2010). Financial aid is especially critical for promoting equal access to postsecondary education for students from low-income and disadvantaged backgrounds (St. John, Paulsen, & Carter, 2005). Although financial aid alone may not remove barriers to student success (R. Stinebrickner & Stinebrickner, 2003), research has shown that how postsecondary educational institutions spend their financial aid dollars and allocate aid dollars between need and merit has significant influence on student outcomes as well as on college choice (Doyle, 2008; Hossler & Kwon, 2015; St. John et al., 2005). Moreover, changes in federal aid policy also impact institutional policies and practices in the amount and distribution of institutional financial aid (Hossler & Kwon, 2015).

The effects of financial aid on postsecondary access and persistence have received considerable attention in U.S. institutional research over the last few decades. This research has covered topics related to changes in information dissemination and application procedures (Hossler, Ziskin, Gross, Kim, & Cekic, 2008); the effects of financial aid on college choice (Hossler, Braxton, & Coopersmith, 1989; Hossler, Hu, & Schmit, 1999); federal need-based grants (St. John, 1992, 2003; St. John, Hu, & Tuttle, 2000; St. John, Paulsen, & Starkey, 1996); state-based grant programs (Hossler et al., 2008; Toutkoushian & Hillman, 2012); institutional merit-aid programs (Singell & Stater, 2006; Doyle, 2008); and student loans (Hillman, 2014; Hansen, 2008; Hossler et al., 2008).

Recently, issues regarding need as a basis for receiving aid have received increased attention. Traditionally, federal and state financial aid resources have mainly targeted widening access for qualified students from low-income families and disadvantaged minorities. Accordingly, institutions have focused on using need-based aid available from governmental sources to meet specific enrollment goals related to student talent and diversity (St. John, 2003). Nevertheless, as the form of financial aid has shifted from grants to loans in

recent decades, student debt has risen steeply in a number of countries, including the United States, Canada, Austria, and several Asian countries (Altbach et al., 2016). This growing trend of replacing grants with student loans threatens to erode equal opportunities in higher education for many students and mortgage their futures with excessive debt. Thus aid in the form of loans may act as a deterrent rather than support for low-income students. Increasingly, therefore, it is incumbent among policy makers to examine various policy levers that have been enacted in search of optimal solutions to issues of student access to and success in tertiary education.

A Synthesis of Research of the Impact of Financial Aid in Institutional Research

Knowledge about the goals and consequences of student financial aid policies is of importance internationally because the educational disparities that remain are likely to continue to grow in the coming decades (Altbach et al., 2016). In U.S. higher education, there is still economic stratification, suggesting that equitable access has not yet been provided to all students. Low-income students tend to be concentrated in two-year rather than four-year postsecondary institutions in general; and within four-year institutions, they are likely to go to less selective institutions (Engberg, 2011). Perna (2010) found that students have a better fit with their institutions when they are well informed prior to college matriculation about the net costs for attending college. As a consequence, universities and colleges provide a variety of informational and counseling services for high school graduates. As Borden (2004) argued, institutional research in the field of financial aid studies has helped policy-makers and practitioners understand the higher educational landscape so they can relate policies and practices to educational outcomes.

In academic institutional research, various models have been developed to analyze the interplay between financial aid and student outcomes such as persistence and retention. Among the more prominent are Tinto's student integration model (1975, 1993), Bean's model of attrition (1985, 1990), Cabrera et al.'s student adjustment model (1992, 1993), and Braxton and associates' (Braxton & Hirshy, 2005; Braxton & McClendon, 2001-2002) as well as St. John's (St. John, 1992; St. John et al., 2000) extensions of research on the relationship between institutional policies and practices and student behaviors. Overall, extant research evidence suggests that financial aid programs have more positive than negative impacts.

The body of research emanating from the U.S. was initially based on a context of traditional-college-age students within the context of residential colleges and universities. Tinto's (1975) seminal model reflected this focus. As early as the mid 1980s, however, Bean and Metzner (1987) specifically considered factors that influence nontraditional student persistence in higher education, including perceived financial barriers, number of working hours, lack of encouragement, family responsibilities, and opportunities to transfer to other institutions. Further research conducted by Braxton, Hossler and St. John elaborated on the original models proposed by Tinto, as extended by Bean and others with a specific focus on the relationship between financial aid policies and programs and student success.

Financial Aid Studies as a Component of Studies Related to Student Success

Because this paper focuses on institutional research emphasizing the intersection between student financial aid and college access and success, the guiding perspective is based on the work of researchers investigating this area, including J. M. Braxton, D. Hossler, E. P. St. John, R. Toutkoushian, J. Bean, A. F. Cabrera, E. T. Pascarella & P. T. Terenzini, and S. DesJardins.

Several studies focusing on how institutional policies and practices affect student behaviors were conducted by Braxton, Hirschy and McClendon (2004), Braxton and McClendon (2001-2002), Braxton et al. (2014), and Hossler and colleagues (Hossler, 2006a; Stage & Hossler, 2000). In particular, Braxton, Hirschy, and McClendon investigated ways in which recruitment, advising, teaching and learning, student support, financial aid, and residential life promote student's social integration and retention. In their extensive review of the college student persistence literature, Braxton, Sullivan, and Johnson (1997) identified four theoretical frameworks that have been used to examine college student departure behaviors based on psychological, sociological, economic, and organizational theories. Psychological theories focus on how student's perceptions, attitudes, goals and motivations affect their persistence (Braxton, Vesper, & Hossler, 1995).

Studies employing a sociological perspective emphasize how socialization processes, as well as the interpersonal contexts of institutions affect student persistence. Economic frameworks explain student persistence and departure behaviors in relation to cost factors as well as rational decision-making processes. Organizational theories identify the effects of institutional characteristics, such as financial resources, enrollment size, and faculty-student ratios, on student persistence (Braxton et al., 1997).

St. John (1992) conducted a series of studies focusing specifically on the effects of financial aid on students' perceptions and college experiences. Using existing institutional data sources, he developed a model for assessing the effects of financial aid on persistence decisions of first-generation college attendees. The study he conducted with colleagues (St. John et al., 1996) situated the interrelationship of enrollment decisions and persistence within the broader spectrum of student choice. In particular, they posit that a student's initial commitment to an institution, which is shaped by costs and aid opportunities, affects his/her intention to complete a degree. This study is distinct from prior approaches in that it reconstructs a financial-impact model to relate to student enrollment decisions. Its findings provide evidence that finance-related choices have direct and indirect impacts on whether students persist in college.

Also focusing more directly on financial aid, Cabrera et al. (1992, 1993) constructed a financial-impact model related to college enrollment and provided evidence that finance-related factors have intangible and indirect effects on student success. However, as Toutkoushian and Hillman (2012) noted in their study of a large-scale, state-based financial aid program, students who participate in such programs could already be more motivated than other populations, resulting in greater likelihood of their persisting regardless of the financial aid they receive, potentially leading to a spurious association between the aid program and persistence outcomes due to self-selection as well as other selection effects.

In review, the U.S. literature on student success in college was stimulated by a set of theoretical models that considered how various psychological, sociological, economic and organizational factors affect college choice, initial commitment, persistence and ultimately successful completion (Pascarella & Terenzini, 2005). Financial aid was included in many of these studies as one of several components that influenced student outcomes. Later studies honed in on the impact of financial aid on initial college choice, commitment and subsequent persistence. These studies reveal general positive impacts, but these impacts are nuanced in many ways, including direct, indirect, and conditional effects. Epitomizing these nuances, a series of studies by DesJardins and colleagues using Event History Modeling demonstrated that financial aid impacts vary over the span of students' careers in college (DesJardins, Kim, & Rzonca, 2003; DesJardins & McCall, 2010).

Financial Aid Policies in Taiwanese Higher Education

Because colleges and universities increasingly rely on students and their associated financial aid dollars as a source of institutional revenue, it has become more important to examine how the government funds flow through higher educational institutions with different levels of subsidies (Hossler, 2006b). The objectives for financial aid policies in Taiwan are aimed at both meeting the financial needs of low-income family students and rewarding academic merit. To achieve these objectives, the Ministry of Education (MOE) distributes large subsidies to both public and private institutions. With regard to need-based aid, the government provides substantial scholarships through various channels, including tuition waivers, the Financial Need of Disadvantaged Students Program (FNDSP), and student loans. Considerable attention has focused on how much the MOE and postsecondary institutions spend on student financial aid and how they distribute aid dollars to students from low-income and disadvantaged backgrounds. However, there is a dearth of empirical institutional research that examines the interplay between student financial aid policies and student success (Lin & Hossler, 2014).

Commitment to Broadening Student Access and Success

The goal of financial aid policy in Taiwan is to ensure access for those otherwise unable to afford college and pursue the broad societal goal of equity of college opportunity (Ministry of Education [MOE], 2014; Lin & Hossler, 2014). Due to the lack of a nationwide integrated postsecondary education data system, however, scholars have limited understanding of the potential of institutional research to provide a comprehensive picture of how postsecondary institutions spend aid dollars as well as suggest effective financial strategies to improve institutional performance and support student progress towards degree-completion.

Hung and Cheng (2009) found that the issue of unequal financial resources and academic access correlates with the selectivity of Higher Educational Institutions (HEIs). Students from higher SES families and those who graduated from highly selective high schools are more likely to attend top-ranked universities than low SES counterparts from less selective high schools (Fu, 2000). Such perspectives suggest that students with highly educated parents have a distinct advantage over first-generation students and disadvantaged minorities in understanding the value of higher education and

its role in advancing personal development and economic opportunities. In terms of the application process for financial aid, additional evidence has indicated that colleges and universities play an important role on providing information and directing aid dollars toward students who are in need financially (Chou, 2007).

It is worth noting that the MOE is more prescriptive than U.S. state or federal agencies in managing its financial aid programs and how they are administered at the institutional level. Furthermore, tuition costs are controlled by the MOE and have remained stagnant for several years, which is different from the market model of U.S. higher education. Nonetheless, the amount of financial aid Taiwanese students receive has not kept pace with inflation, resulting in many students taking on loans or more part-time work to pay for college education (Yang, Ho, & Chen, 2013).

Challenges for Financial Aid Studies in Institutional Research in Taiwan

On the whole, the influence of financial aid policies on postsecondary institutions was found to be unclear but associated with how colleges and universities allocate their aid dollars to low-income students as well as student enrollment behaviors (MOE, 2014). Furthermore, not all students and parents have equal opportunities to access financial aid information and navigate a confusing and complicated financial aid system (Hossler, 2006b; Lin, 2011; Wang & Yang, 2013). Altogether, several challenges identified in the existing literature are presented below.

Examples of Institutional Research to Examine Financial Aid Programs in Taiwan

Driven by increasing concerns about college affordability and rising costs of college education, the MOE has designed and implemented several programs to help students from low SES backgrounds pay for college. Research suggests that the more students take advantage of aid opportunities, the more likely they are to enroll in college (Chou, 2007; Engberg, 2011; Jaquette & Hillman, 2015). However, more coordinated research on the effects of financial aid and student success as well as college enrollment behaviors is needed. Yang (2007) used descriptive analysis and semi-structured interviews with administrators and students to examine financial aid

practices in Taiwan. He further investigated how financial aid practices affect the affordability of tuition costs for college students, especially for low-income students. He concluded that financial assistance is essential for certain groups to access postsecondary education. Although the majority of students were able to get relevant information about financial aid packages through searching the Internet, there are several critical processes that confirm the importance of assistance provided by postsecondary institutions to ensure that students receive critical information on the timeline of actions required for obtaining financial support and at the same time obtain needed information about student characteristics. As students matriculate to college and undertake their studies, the information HEIs provide through registration and directly to other administrative units helps to identify critical stages of student progress and persistence toward degree-completion and opportunities for various supports, including financial.

Yang and Chen (2008) used descriptive analysis to investigate how junior college students paid tuition and fees in 2005 and analyzed the relationship between financial aid and family annual income in different disciplines in public and private institutions in Taiwan. Their results indicate that students studying in public institutions have higher financial support from their parents or relatives than those in private institutions. However, whether they study at public or private institutions, low-income students, do not have substantial financial support from their families, compared to more affluent families, whose contributions account for 36% and 46% of total costs, respectively. Moreover, 30% of students in public institutions use loans to pay tuition, while 43% in private institutions do so. Choice of major, however, does not differentially impact the sources of financial support for students. This study also shows that most college students are financially dependent on family support, and student aid serves an important role in helping low-income students and disadvantaged minorities pay for tuition costs to persist in colleges.

Yang et al. (2013) further examined Taiwanese college students' perceptions of work-study as reduced financial support from the government has compelled many students to take part-time jobs. Recently, Wang and Yang (2013), funded by the Council for Economic Planning and Development (CEPD), examined policies for the cultivation of the talent of economically disadvantaged students in higher education using multiple methods, including document analysis, literature review, comparative studies, and group

discussions. The results suggested that priority should be placed on financial aid policy as a critical factor affecting student access to and success in higher education, and the government should set up an integrated platform or network of services to facilitate application for financial aid for the economically disadvantaged. Notably, approximately 80% of the students enrolled in the higher cost private sector schools are low-income, compared to approximately 20% enrolled in the public sector (Department of Statistics, 2015). That is, low-income¹ students and their families have to spend more to attend less selective institutions, which poses a problem for student retention (Yang & Chen, 2008).

The Importance of Collaboration Between IR and Other Units

Between 2005 and 2010, student enrollment at the undergraduate level in Taiwan increased from 1.12 million to 1.20 million. The concomitant rapid expansion in the number of colleges and universities suggests that higher education has shifted from elite to mass education. However, according to a report from the Department of Statistics (MOE, 2015), college enrollment was expected to decrease by approximately 20,000 students in 2016 due to a declining birth rate within the country. To ensure continuing high levels of participation in Taiwan's colleges and universities, the MOE has started to focus on the issue of student learning outcomes, allocating substantial funds for financial aid to colleges and universities for this purpose. Accordingly, financial aid policies are now considered as a high-impact institutional practice to influence student success in both learning and retention.

Because IR professionals were increasingly being asked to demonstrate the success of these programs (Hansen, 2008), they needed the cooperation of a number of affiliated student affairs units. Therefore, the issue of financial aid policies has involved affiliated units of IR in the field of higher education, including offices of enrollment management, recruitment and scholarships, the registrar and bursar, retention and graduation, and so on. As has been demonstrated, students need adequate support throughout the application process (Scott-Clayton, 2015), which requires close communications and collaboration among a range of administrative offices within each institution.

While these studies provide a beginning, there is a need for more investigations of the effectiveness of financial aid policies in Taiwanese higher

¹ Low-income family means an annual family income below 1.14 million N.T. dollars

education. Indeed, how to achieve equity in opportunities for all income groups is a major concern in higher education policy circles. Empirical research provides a necessary basis for both institutional leaders and policy makers to assess the effects of institutional practices on student persistence, calling for the expansion of institutional research to supplement national studies.

Applying Lessons From the U.S. Context

How Institutional Research Informs Institutional Policies and Practices: Financial Aid as a Mediator for Student Success

During the last few decades, Taiwanese higher education system has gone through significant changes related to its focus on improving institutional effectiveness (Tsai & Shavit, 2007). Simultaneously, the number of private institutions has increased at a notably faster rate than the stable growth of public sector institutions. Prior to 1994, the Ministry of Education was the primary funding source for all national (public) institutions. With the introduction of the new University Fund System, public institutions have been allowed 30 % flexibility in tuition charges in order to become more financially independent in the long run (Mok & Chan, 2008). Along with this policy, the government cut about 20 to 25% of financial resources from public institutions and redirected those funds to private HEIs, and since the 1999-2000 academic year, 20% of the regular income of private institutions has been provided by the MOE. Consequently, research grants and tuition fees have become an important portion of institutional revenues for public institutions, while private institutions have become more accountable to the MOE and the general public (Mok & Chan, 2008; MOE, 2012). During this same time period, the MOE slightly loosened restrictions on college tuition charges by adopting the user-pay principle to enable postsecondary institutions to diversify their sources of institutional revenues (Lo & Tai, 2004). The 2005 revision of the University Law further deregulated higher education by granting more autonomy of university governance and finances (MOE, 2012). In brief, the tremendous expansion of private HEIs has led to their accepting greatly increased supervision by the MOE so as to reach the target of 20% of MOE-funding, while public institutions have been forced to seek additional non-government revenues.

As a result of these policy changes, only public institutions with larger endowments can afford lower tuition costs and also have the resources to offer

substantial financial support to attract high-ability students. As a consequence, they are more selective and prestigious than private institutions (Dee, Henkin, & Chen, 2000). By contrast, private HEIs are less selective and feature higher tuition costs. Thus, Hung and Cheng (2009) found a high proportion of low-income students concentrated in private HEIs compared to public HEIs, indicating that students from high-income and well-educated backgrounds still continue to have unequal access to highly prestigious and less expensive public HEIs. Similarly, the results indicated that two and a half times as many students in private institutions received financial aid as those in public institutions, though not at a level to reach parity with costs as a public institution. As a result, financial aid is a necessary but not sufficient support for student success (Lin, 2016). According to the latest statistical reports (MOE, 2012), from 2004 to 2011, government expenditures on financial aid programs increased from 4.2 to 6 billion dollars, an increase of 42%, while the number of recipients increased 25%. Nevertheless, with rising college costs, the actual amount of aid provided might be inadequate to support low-income students' continued enrollment, leading them to seek additional financial sources such as off-campus employment or privately funded scholarships.

Student success and continuing enrollment are determined by many factors besides financial assistance, such as prior academic preparation, family and significant others' attitudes, and campus environment and support (Gladieux, King, & Corrigan, 2005). Students from poor families of all ethnic backgrounds and those whose parents did not attain a college degree are less likely to succeed in college (Chou, 2007). As a consequence, college participation, particularly in four-year institutions, remains inequitable, perpetuating traditional social inequalities in Taiwanese society.

In summary, the higher education finance landscape continues to change. The financial austerity has caused the MOE to look at institutional effectiveness and accountability more critically with a variety of performance assessments. In this environment of increasing demands and social expectations, HEIs have become both more cautious and responsive to a more diverse audience. A better understanding of how different student aid packages affect students' decisions may not only improve student success, but also permit policymakers to improve the efficiency and effectiveness of student aid dollars.

The Need to Investigate the Relationship Between Financial Aid and Student Success

As higher education around the world faces challenging times in responding to increasing forms of accountability and competition, stakeholder expectations, and the advancement of technologies, IR has evolved to become a stronger force in decision-making. Since 2014, the Ministry of Education (MOE) has been shaping the field of IR in higher educational institutions (HEIs) by facilitating such initiatives as symposia and workshops emphasizing student learning outcomes based on data-driven research to inform policy-making and institutional resource management. Toward this end, the Taiwan Association for Institutional Research (TAIR) was officially founded in 2015 to advance sustainability and performance initiatives across institutions within and beyond Taiwan. It is also the professional organization that promotes the professional development of postsecondary educational institutions and individuals by providing support for institutional researchers and practitioners to pursue learning and share best practices.

Because IR is a new area of professional focus in Taiwan, higher education is now experiencing a transition. Conducting useful IR studies requires access to comprehensive data related to students, staff, and finances, and an integrated data system that is designed to support analytical studies (Volkwein, 2008; Webber & Calderon, 2015). Unlike operational systems, in which data are constantly generated and updated, an analytical data system is composed of integrated point-in-time snapshots of operational data that are restructured for use with statistical and numerical analysis software packages (Howard, McLaughlin, Knight, & Associates, 2012; Borden, Milam, & Massa, 2001). The development and management of analytic data structures further require specialized staffing and timely staff development (Borden et al., 2001).

In addition to the collaboration needed between IR and IT to build an integrated analytical data system, further collaborations are needed to enhance data governance structures and ultimately decision-making. Until now, many universities and colleges have relied on Information Technology (IT) departments to store and manage data centrally and avoid building applications and maintaining data in individual administrative units. However, under these arrangements, the standardization and documentation of data are poorly coordinated. As a result, as institutional research continues to develop in Taiwan, institutional researchers encounter many challenges, which poses

the question of the extent to which colleges and universities are able to fulfill the expectations of the public and other stakeholders.

Transforming IR into Action for Evidence-Based Decision Making

Moving from producing IR data to using the data to drive change and produce results is not simple. It is important that those involved in developing IR in Taiwan focus clearly on how the information and intelligence they produce is subsequently used in administrative and academic decision-making. Although data availability and accuracy are important, the IR professional must balance between ideal and actual conditions. As noted statistical pioneer, John Tukey, wrote, “[f]ar better an approximate answer to the right question, which is often vague, than an exact answer to the wrong question, which can always be made precise” (Tukey, 1962, pp. 13-14). IR professionals, often faced with unintegrated and less than perfectly reliable data, must use techniques like triangulation and multiple methods to glean useful intelligence from less than perfect data. To foster deep reflection on data that results in meaningful change, institutional researchers must provide leadership in developing processes for reviewing and acting upon data. As a result, collaboration between the offices of IR and affiliated administrative units in co-creating evidence based decision-making processes is required so as to enhance institutional effectiveness and accountability.

IR is in the early stage of development in Taiwan, as many systems for IR are just being established, specifically in the essential areas of data management. It can be argued that the integration between IR and IT systems is the first priority. The study of financial aid in relation to student success and persistence is both a critical need and also an ideal domain for developing integration because it requires information from a range of functional areas (admissions, finances, student enrollment, etc.) While the Taiwanese studies cited earlier (for example, Yang, 2007 and Yang & Chen, 2008) provide a beginning, there is a need for more investigations of the effectiveness of financial aid policies. Although these two modest studies are useful as a starting point, it is particularly important that individual Taiwanese higher education institutions explore financial aid impacts within their local contexts.

Implications for Institutional Practitioners

This paper has described the importance of expanding financial aid studies in Taiwan, a claim supported by the long and important history of this

area of study in the U.S. and the current context of declining enrollments and governmental resources for higher education. The current status of higher education and institutional research in Taiwan higher education was explored, casting light not only on financial aid policy in relation to college affordability, but also on the quality of the college education students receive (Scott-Clayton, 2015). The MOE and colleges and universities both play pivotal roles in ensuring that quality educational opportunities are made accessible to students who are in need financially. To meet the increasing demands for accountability and institutional improvement, institutional research is essential for responsible, evidence-based decision making. Focusing on institutional research related to financial aid policy and practice can serve as an appropriate case to exemplify both the importance of IR and the need for developing IR capacity as an institutional priority. Efforts to provide more accessible information on student financial aid depend crucially on how well IR professionals collaborate with affiliated administrative units to transform data into information and intelligence that can guide institutional decision-making and better inform the public.

There has not yet been nearly enough research in Taiwan regarding the role of financial aid in promoting access among low-income students, nor about its effect on student outcomes. Although more broadly aimed higher education research would be helpful toward this end, it is particularly important that individual institutions undertake studies of local effects within local contexts. Toward this end, it is critical for institutions to develop their capacities to engage in institutional research (IR), and specifically, IR that is framed and guided by theoretical considerations that promote clear interpretation and connote actions and decisions that improve student success.

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