

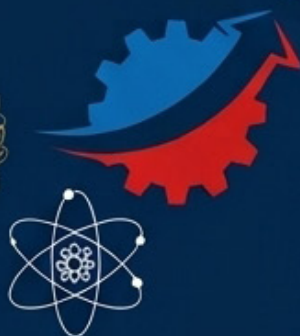
MUHANDISLIK

& IQTISODIYOT

*ijtimoiy-igʻtisodiy, innovatsion texnik,
fan va taʼlimga oid ilmiy-amaliy jurnal*

2026-YIL

SENTYABR / 9-SON, II-QISM



Milliy nashrlar

OAK: <https://oak.us/pages/4802>

05.00.00 – Texnika fanlari

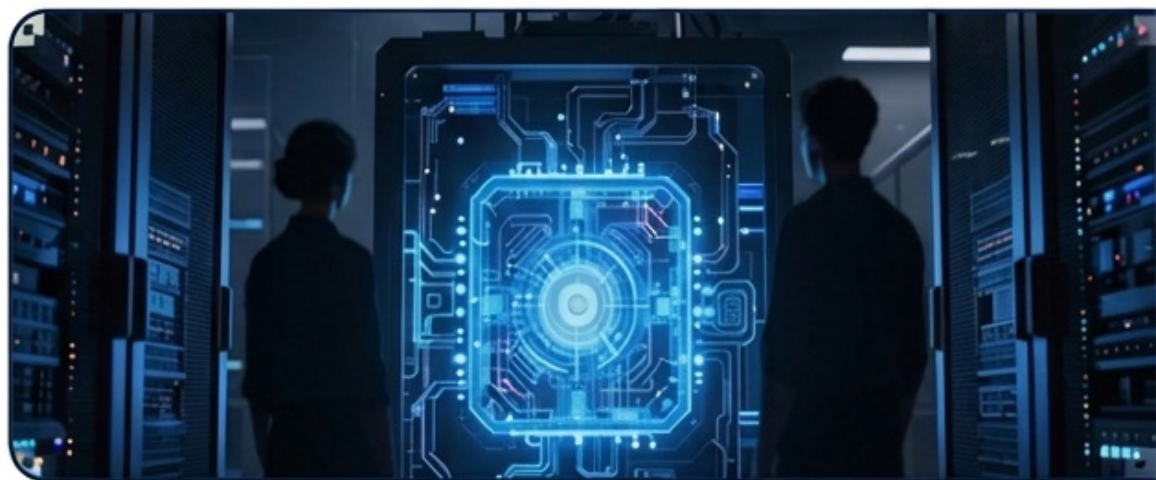
08.00.00 – Iqtisodiyot fanlar



Google
Scholar

ISSN
INTERNATIONAL
STANDARD
SERIAL
NUMBER
INTERNATIONAL CENTRE

OpenAIRE



ISSN: 3060-463X

РЭУ.РФ
ИМЕНИ Ф.Р. РЕКАНОВА
ФИЗИКО-МАТЕМАТИЧЕСКИЕ НАУКИ



muhandislik & iqtisodiyot

ijtimoiy-iqtisodiy, innovatsion texnik,
fan va ta'limga oid ilmiy-amaliy jurnal

Elektron nashr, 2026-yil, sentyabr.

Bosh muharrir:

Zokirova Nodira Kalandarovna, iqtisodiyot fanlari doktori, DSc, professor

Bosh muharrir o'rinbosari:

Shakarov Zafar G'afforovich, iqtisodiyot fanlari bo'yicha falsafa doktori, PhD, dotsent

Tahrir hay'ati:

Abduraxmanov Kalendar Xodjayevich, O'z FA akademigi, iqtisodiyot fanlari doktori, professor

Sharipov Kongratbay Avezimbetovich, texnika fanlari doktori, professor

Maxkamov Baxtiyor Shuxratovich, iqtisodiyot fanlari doktori, professor

Abduraxmanova Gulnora Kalandarovna, iqtisodiyot fanlari doktori, professor

Shaumarov Said Sanatovich, texnika fanlari doktori, professor

Turayev Bahodir Xatamovich, iqtisodiyot fanlari doktori, professor

Nasimov Dilmurod Abdulloyevich, iqtisodiyot fanlari doktori (DSc), professor

Allayeva Gulchexra Jalgasovna, iqtisodiyot fanlari doktori, professor

Arabov Nurali Uralovich, iqtisodiyot fanlari doktori, professor

Maxmudov Odiljon Xolmirzayevich, iqtisodiyot fanlari doktori, professor

Xamrayeva Sayyora Nasimovna, iqtisodiyot fanlari doktori, professor

Bobonazarova Jamila Xolmurodovna, iqtisodiyot fanlari doktori, professor

Irmatova Aziza Baxromovna, iqtisodiyot fanlari doktori, professor

Bo'taboyev Mahammadjon To'ychiyevich, iqtisodiyot fanlari doktori, professor

Shamshiyeva Nargizaxon Nosirxuja kizi, iqtisodiyot fanlari doktori, professor,

Xolmuxamedov Muhsinjon Murodullayevich, iqtisodiyot fanlari nomzodi, dotsent

Xodjayeva Nodiraxon Abdurashidovna, iqtisodiyot fanlari nomzodi, dotsent

Amanov Otabek Amankulovich, iqtisodiyot fanlari bo'yicha falsafa doktori (PhD), dotsent

Toxirov Jaloliddin Ochil o'g'li, texnika fanlari bo'yicha falsafa doktori (PhD)

Qurbonov Samandar Pulatovich, iqtisodiyot fanlari bo'yicha falsafa doktori (PhD)

Zikriyoyev Aziz Sadulloyevich, iqtisodiyot fanlari bo'yicha falsafa doktori (PhD)

Tabayev Azamat Zaripbayevich, iqtisodiyot fanlari bo'yicha falsafa doktori (PhD)

Sxay Lana Aleksandrovna, iqtisodiyot fanlari bo'yicha falsafa doktori (PhD), dotsent

Ismoilova Gulnora Fayzullayevna, iqtisodiyot fanlari nomzodi, dotsent

Djumaniyazov Umrbek Ilxamovich, iqtisodiyot fanlari nomzodi, dotsent

Kasimova Nargiza Sabitdjanovna, iqtisodiyot fanlari nomzodi, dotsent

Kalanova Moxigul Baxritdinovna, dotsent

Ashurzoda Luiza Muxtarovna, iqtisodiyot fanlari bo'yicha falsafa doktori (PhD)

Sharipov Sardor Begmaxmat o'g'li, iqtisodiyot fanlari bo'yicha falsafa doktori (PhD)

Tursunov Ulug'bek Sativoldiyevich, iqtisodiyot fanlari doktori (DSc), dotsent

Bauyetdinov Majit Janizaqovich, Toshkent davlat iqtisodiyot universiteti dotsenti, PhD

Botirov Bozorbek Musurmon o'g'li, Texnika fanlari bo'yicha falsafa doktori (PhD)

Sultonov Shavkatjon Abdullayevich, Kimyo fanlari doktori, (DSc)

Jo'raeva Malohat Muhammadovna, filologiya fanlari doktori (DSc), professor.

Yusupov Maxamadamin Abduxamidovich, iqtisodiyot fanlari nomzodi (DSc), professor

Kalonova Moxigul Baxritdinovna, iqtisodiyot fanlari nomzodi (PhD), dotsent

Mirzayev Kulmamat Djanzakovich, iqtisodiyot fanlari nomzodi (DSc), professor.

Karimova Nilufar Sadirdin qizi, iqtisodiyot fanlari bo'yicha falsafa doktori (PhD)

Norboyev Odil Abrayevich, iqtisodiyot fanlari bo'yicha falsafa doktori (PhD), dotsent

Karimova Nilufar Sadirdin qizi, iqtisodiyot fanlari bo'yicha falsafa doktori (PhD)

Pardaev Umidjon Uralovich, iqtisodiyot fanlari doktori (DSc), professor

Xolmirzayev Ulug'bek Abdulazizovich, Iqtisodiyot fanlari doktori (DSc)

muhandislik & iqtisodiyot

ijtimoiy-iqtisodiy, innovatsion texnik,
fan va ta'limga oid ilmiy-amaliy jurnal

- 05.01.00 – Axborot texnologiyalari, boshqaruv va kompyuter grafikasi
- 05.01.01 – Muhandislik geometriyasi va kompyuter grafikasi. Audio va video texnologiyalari
- 05.01.02 – Tizimli tahlil, boshqaruv va axborotni qayta ishlash
- 05.01.03 – Informatikaning nazariy asoslari
- 05.01.04 – Hisoblash mashinalari, majmualari va kompyuter tarmoqlarining matematik va dasturiy ta'minoti
- 05.01.05 – Axborotlarni himoyalash usullari va tizimlari. Axborot xavfsizligi
- 05.01.06 – Hisoblash texnikasi va boshqaruv tizimlarining elementlari va qurilmalari
- 05.01.07 – Matematik modellash
- 05.01.11 – Raqamli texnologiyalar va sun'iy intellekt
- 05.02.00 – Mashinasozlik va mashinashunoslik
- 05.02.08 – Yer usti majmualari va uchish apparatlari
- 05.03.02 – Metrologiya va metrologiya ta'minoti
- 05.04.01 – Telekommunikatsiya va kompyuter tizimlari, telekommunikatsiya tarmoqlari va qurilmalari. Axborotlarni taqsimlash
- 05.05.03 – Yorug'lik texnikasi. Maxsus yoritish texnologiyasi
- 05.05.05 – Issiqlik texnikasining nazariy asoslari
- 05.05.06 – Qayta tiklanadigan energiya turlari asosidagi energiya qurilmalari
- 05.06.01 – To'qimachilik va yengil sanoat ishlab chiqarishlari materialshunosligi
- 05.08.03 – Temir yo'l transportini ishlatish
- 05.08.06 – "G'ildirakli va gusenisali mashinalar va ularni ishlatish" (texnika fanlari)
- 05.09.01 – Qurilish konstruksiyalari, bino va inshootlar
- 05.09.04 – Suv ta'minoti. Kanalizatsiya. Suv havzalarini muhofazalovchi qurilish tizimlari
- 10.00.06 – Qiyosiy adabiyotshunoslik, chog'ishtirma tilshunoslik va tarjimashunoslik
- 10.00.04 – Yevropa, Amerika va Avstraliya xalqlari tili va adabiyoti
- 08.00.01 – Iqtisodiyot nazariyasi
- 08.00.02 – Makroiqtisodiyot
- 08.00.03 – Sanoat iqtisodiyoti
- 08.00.04 – Qishloq xo'jaligi iqtisodiyoti
- 08.00.05 – Xizmat ko'rsatish tarmoqlari iqtisodiyoti
- 08.00.06 – Ekonometrika va statistika
- 08.00.07 – Moliya, pul muomalasi va kredit
- 08.00.08 – Buxgalteriya hisobi, iqtisodiy tahlil va audit
- 08.00.09 – Jahon iqtisodiyoti
- 08.00.10 – Demografiya. Mehnat iqtisodiyoti
- 08.00.11 – Marketing
- 08.00.12 – Mintaqaviy iqtisodiyot
- 08.00.13 – Menejment
- 08.00.14 – Iqtisodiyotda axborot tizimlari va texnologiyalari
- 08.00.15 – Tadbirkorlik va kichik biznes iqtisodiyoti
- 08.00.16 – Raqamli iqtisodiyot va xalqaro raqamli integratsiya
- 08.00.17 – Turizm va mehmonxona faoliyati

Ma'lumot uchun, OAK

Rayosatining 2024-yil 28-avgustdagi 360/5-son qarori bilan "Dissertatsiyalar asosiy ilmiy natijalarini chop etishga tavsiya etilgan milliy ilmiy nashrlar ro'yxati"ga texnika va iqtisodiyot fanlari bo'yicha "Muhandislik va iqtisodiyot" jurnali ro'yxatga kiritilgan.

Muassis: "Tadbirkor va ishbilarmon" MChJ

Hamkorlarimiz:

1. Toshkent shahridagi G.V.Plexanov nomidagi Rossiya iqtisodiyot universiteti
2. Toshkent davlat iqtisodiyot universiteti
3. Toshkent irrigatsiya va qishloq xo'jaligini mexanizatsiyalash muhandislari instituti" milliy tadqiqot universiteti
4. Islom Karimov nomidagi Toshkent davlat texnika universiteti
5. Muhammad al-Xorazmiy nomidagi Toshkent axborot texnologiyalari universiteti
6. Toshkent davlat transport universiteti
7. Toshkent arxitektura-qurilish universiteti
8. Toshkent kimyo-texnologiya universiteti
9. Jizzax politexnika instituti



MUNDARIJA

O'ZBEKISTON TIJORAT BANKLARIDA KREDIT RISKINI ERTA ANIQLASH TIZIMINI SUN'IY INTELLEKT ASOSIDA TAKOMILLASHTIRISH.....	9
Kobilova Ozoda Abdishukur qizi	
BUYUK BRITANIYA STARTAP EKOTIZIMINI BOSHQARISH MODEL VA O'ZBEKISTON UCHUN SABOQLAR.....	15
Sodiqov Elmurod Shomurod o'g'li	
ФИНАНСОВЫЕ ОГРАНИЧЕНИЯ АГРОБИЗНЕСА, РЕФОРМА ИНСТИТУТА НЕПЛАТЁЖЕСПОСОБНОСТИ И ГЕОГРАФИЯ СЕЛЬСКОЙ БЕДНОСТИ: УЗБЕКИСТАН, 2015–2025 ГОДЫ.....	21
Адилов Шерзот Шамильевич	
AHOLI DAROMADLARI VA ISTE'MOL XARAJATLARINI TADQIQ ETISHNING ZAMONAVIY EKONOMETRIK YONDASHUVLARI	30
Farmonov Dilshod Po'latovich	
SUN'IY INTELLEKT TRANSFORMATSIYASI SHAROITIDA INSON KAPITALIGA QO'YILADIGAN KOMPETENSIYAVIY TALABLARNING O'ZGARISHI: XALQARO TENDENSIYALAR VA O'ZBEKISTON UCHUN USTUVOR YO'NALISHLAR	36
Durdona Davletova	
KICHIK BIZNES SOHASIDA INSON KAPITALINI RIVOJLANTIRISH VA MEHNAT MUNOSABATLARINI TARTIBGA SOLISH OMILLARI, USULLARI HAMDA FUNKSIYALARI	56
Ulug'muradova Nodira Berdimuradovna	
O'ZBEKISTONDA YAKKA TARTIBDAGI TADBIRKORLARNI SOLIQQA TORTISHNING AMALDAGI MEKANIZMI.....	61
Erxanov Muxammadjon Absayitovich	
BOSHQARUV TIZIMIDA IQTISODIY SAMARADORLIKNI OSHIRISHNING ZAMONAVIY MEKANIZMLARI.....	68
Safarov Shohboz Vahob o'g'li	
EVALUATION OF THE PHYTOREMEDIATION POTENTIAL OF AZOLLA CAROLINIANA FOR THE REMOVAL OF TOXIC METALS FROM INDUSTRIAL EFFLUENTS	72
Azimov Shavkat Shuxratovich	
STABLE CEMENT COMPOSITES BASED ON WASTE TIRE RUBBER AND FLY ASH	78
Daminov Oybek, Egamberdiyev Elmurod, Xoliqulov Odiljon	
KICHIK BIZNES VA XUSUSIY TADBIRKORLIK SUBYEKTLARIDA ISHLAB CHIQARILGAN MAHSULOTLARNING EKSPORT SALOHİYATINI BAHOLASH.....	85
Xikmatullayeva Nargiza Jamoliddin qizi	
CO-LOCATED SMALL MODULAR REACTORS AS AN ALTERNATE AC POWER SOURCE FOR LARGE NUCLEAR UNITS UNDER REGIONAL GRID CASCADING CONDITIONS: A DESIGN-BASIS ASSESSMENT FOR UZBEKISTAN	90
Turaeva Dilnavoz	
YO'LOVCHI TASHISH TRANSPORTINI BARQAROR IQTISODIYOTGA ULUSHINI EKONOMETRIK MODELASHTIRISH USULLARI.....	96
Dilshod Karimboyev	
СОВРЕМЕННОЕ СОСТОЯНИЕ И АКТУАЛЬНЫЕ НАПРАВЛЕНИЯ ИСПОЛЬЗОВАНИЯ ЭЛЕМЕНТОВ НАЦИОНАЛЬНОЙ МОДЫ НА ТУРИСТИЧЕСКОМ РЫНКЕ УЗБЕКИСТАНА	102
Юсупова Мохинур Фарход кизи	
АДАПТИВНОЕ РАЗВИТИЕ ЭНЕРГЕТИЧЕСКИХ ПРЕДПРИЯТИЙ КАК ФАКТОР КАЧЕСТВЕННОГО ЭКОНОМИЧЕСКОГО РОСТА УЗБЕКИСТАНА В УСЛОВИЯХ ЭНЕРГОПЕРЕХОДА.....	110
Аллаева Гульчехра Жалгасовна	



ОЦЕНКА ВЛИЯНИЯ ИНСТРУМЕНТОВ ГОСУДАРСТВЕННОГО УПРАВЛЕНИЯ НА ПОВЕДЕНИЕ ПРЕДПРИНИМАТЕЛЕЙ	121
Икрамова Нодира Бурхон кизи	
XONDIZA KONI POLIMETALL RUDALARINING MINERALOGIK VA TEXNOLOGIK XUSUSIYATLARINI TADQIQ ETISH.....	128
Abdisoatov Sardor, Axmatov Sobir, Eshnazarov Mustafo	
MALAKALI MUTAXASSISLAR TAYYORLASHDA TA'LIM-INNOVATSION RIVOJLANISHNING MOHIYATI VA UNING NAZARIY ASOSLARI	133
Temirova Shalola Erkinovna	
BENZIN TARKIBIDAGI KISLOROD MIQDORINI ANIQLASH: TAHLIL USULLARI VA ULARNING AMALIY AHAMIYATI	138
To'xtayev Nozim Nazir o'g'li	
EKSTRAKSIYA JARAYONI PARAMETRLARINING ERITUVCHILARNING EKSTRAKSION QOBILIYATIGA BOG'LIQLIGI	142
G'aybullayev Saidjon Abdusalimovich	
THE ROLE OF CHATBOTS IN EDUCATION AND THEIR APPLICATION	150
Hamroyev Bobirjon Bahritdinovich	
KICHIK BIZNES VA UNING MILLIY IQTISODIYOTNI BARQAROR RIVOJLANISHIDAGI O'RNI.....	156
Xolmirzayev Abdulxamid Xapizovich	
KO'P QATLAMLI SFERIK QOBIQNING QOVUSHQOQ-ELASTIK MUHITDAGI XOS (ERKIN) TEBRANISHLARI	161
Jalolov Farruh Baxshulloyevich	
QAYTA TIKLANUVCHI ENERGIYA MANBALARINI ELEKTR ENERGETIKA TIZIMIGA INTEGRATSIYALASH VA ELEKTR TA'MINOTI BARQARORLIGINI OSHIRISH	168
Jafarov Sobir Talab o'g'li	
SENTINEL-1 PSINSAR TEXNOLOGIYASI ASOSIDA QALMOQQIR OCHIQ KARYERI BORTLARINING DEFORMATSIYASINI SUN'IY YO'LDOSH ORQALI MONITORING QILISH	173
Usmonov Firdavs Ro'zimurod o'g'li	
O'ZBEKISTONDA DAVLAT XARIDLARINI TASHKIL ETISHNING AMALDAGI MEXANIZMI VA UNI TAKOMILLASHTIRISH YO'NALISHLARI	181
Kurbonbekov Sardorbek Ravshanovich	
АНАЛИЗ ДИНАМИКИ, СТРУКТУРЫ И ТЕНДЕНЦИЙ РАЗВИТИЯ КРЕДИТНОГО ПОРТФЕЛЯ КОММЕРЧЕСКИХ БАНКОВ УЗБЕКИСТАНА.....	190
Умаров Улугбек Унарович	
O'ZBEKISTON HUDUDLARIDA IJTIMOY FAROVONLIK VA YASHASH SHAROITLARINI BAHOLASHNING KOMPLEKS YONDASHUVI	197
Jamolov Mirzabek Mirjalil o'g'li	
RAQAMLI IQTISODIYOT SHAROITIDA KICHIK BIZNES VA XUSUSIY TADBIRKORLIKNI RIVOJLANTIRISHNING USTUVOR YO'NALISHLARI	202
Shokirov Shoxruxmirzo Baxtiyorjon o'g'li	
O'ZBEKISTONDA AKSIZ SOLIG'I STAVKALARINING BIR XILDA OSHIRILISHINING FISKAL, ISTE'MOL VA TAQSIMLANISHGA TA'SIRI.....	208
Musurmonov Sherzod Yusupovich	
DEVELOPING A CONCEPTUAL MODEL OF A MARKETING MECHANISM FOR ATTRACTING APPLICANTS	217
Umarov Shuhrat Bahodir o'g'li	



DEVELOPING A CONCEPTUAL MODEL OF A MARKETING MECHANISM FOR ATTRACTING APPLICANTS

Umarov Shuhrat Bahodir o'g'li

Independent Researcher

Abstract. Conceptual models in higher education marketing are commonly proposed and illustrated rather than subjected to explicit empirical testing. This article develops the Applicant Attraction Model, formulates three claims derived from the model, and reports the results of testing each claim using panel data from twenty institutions. The model conceptualises applicant attraction as a sequence of filters in which enrolment is expressed as the product of an exposure rate, a screening rate, and a verification rate.

The first claim—that the composition of these rates is multiplicative—is an accounting identity and is therefore presented as a structural property of the model rather than as an empirical finding. The second claim—that each driver acts primarily on a specific block—is not supported in its original three-block specification. Across the three blocks, every driver records a specificity index between 0.374 and 0.503, compared with a no-specificity floor of 0.333. When the model is simplified to two blocks—exposure and conversion—specificity emerges for the information-related drivers only: the verifiable claim share reaches 0.956 and evidence distance reaches 0.950, relative to a no-specificity floor of 0.500, whereas promotional expenditure, tuition, and programme breadth remain between 0.540 and 0.648. The empirical test therefore supports a more parsimonious two-block representation for the information-related drivers rather than the original three-block specification.

The third claim—that the model can localise the binding constraint—is supported by the observed panel patterns. Exposure is identified as the binding constraint in sixteen institutions and verification in four. Raising the binding rate to the panel median produces estimated gains ranging from zero to 172.7 per cent across institutions and an aggregate sector-level gain of 8.4 per cent without additional capacity.

When compared with a single reduced-form equation, the Applicant Attraction Model provides a lower in-sample fit ($R^2 = 0.969$ versus $R^2 = 0.996$) but yields institution-specific diagnostic implications. By contrast, applying the largest coefficient from the reduced-form specification as a decision rule would imply the same recommended action for all twenty institutions. The comparison illustrates the distinction between maximising statistical fit and using a conceptual model to identify institution-specific constraints and corresponding areas for intervention.

Keywords: conceptual model; applicant attraction; higher education marketing; marketing mechanism; block specificity; binding constraint; explanatory modelling; Uzbekistan.

Annotatsiya. Oliy ta'lim marketingiga oid konseptual modellar, odatda, taklif etiladi va tasvirlab beriladi, biroq ular aniq empirik sinovdan kamroq o'tkaziladi. Ushbu maqolada Abituriyentlarni jalb qilish modeli (Applicant Attraction Model) ishlab chiqilib, undan kelib chiqadigan uchta ilmiy da'vo shakllantiriladi hamda ularning har biri yigirmata oliy ta'lim muassasasidan iborat panel ma'lumotlari asosida sinovdan o'tkaziladi. Model abituriyentlarni jalb qilish jarayonini ketma-ket filtrlardan iborat jarayon sifatida konseptualashtiradi, bunda talabalikka qabul qilinish ekspozitsiya darajasi, saralash darajasi va verifikatsiya darajasining ko'paytmasi sifatida ifodalanadi.

Birinchi da'vo — ushbu ko'rsatkichlar kompozitsiyasining multiplikativ xususiyatga ega ekanligi — hisob-kitob ayniyati hisoblanadi va shu sababli empirik natija sifatida emas, balki modelning tarkibiy xususiyati sifatida taqdim etiladi. Ikkinchi da'vo — har bir omil asosan muayyan blokka ta'sir qilishi — dastlabki uch blokli spetsifikatsiyada tasdiqlanmadi. Uchta blok bo'yicha barcha omillarning spetsifiklik indeksi 0,374 dan 0,503 gacha bo'lib, spetsifiklik mavjud bo'lmagan holat uchun bazaviy chegara 0,333 ni tashkil etadi. Model ikki blokka — ekspozitsiya va konversiyaga — soddalashtirilganda, spetsifiklik faqat axborot bilan bog'liq omillarda namoyon bo'ladi: tekshirilishi mumkin bo'lgan da'volar ulushi (verifiable claim share) 0,956 ga, dalillar masofasi (evidence distance) esa 0,950 ga yetadi, spetsifiklik mavjud bo'lmagan holat uchun bazaviy chegara 0,500 ni tashkil etadi. Shu bilan birga, reklama xarajatlari, ta'lim to'lovi va ta'lim dasturlarining kengligi bo'yicha ushbu ko'rsatkichlar 0,540–0,648 oralig'ida qoladi. Shunday qilib, empirik sinov axborot bilan bog'liq omillar uchun dastlabki uch blokli spetsifikatsiyaga nisbatan parsimonikroq ikki blokli tuzilmani qo'llab-quvvatlaydi.

Uchinchi da'vo — model cheklovchi omilning joylashuvini aniqlay olishi — panel ma'lumotlarida kuzatilgan natijalar bilan tasdiqlanadi. Ekspozitsiya o'n oltita oliy ta'lim muassasasida, verifikatsiya esa to'rtta muassasada cheklovchi omil sifatida aniqlangan. Cheklovchi ko'rsatkichni panel medianasi darajasigacha oshirish oliy ta'lim muassasalari kesimida noldan 172,7 foizgacha bo'lgan hisoblangan o'sishni hamda qo'shimcha quvvat talab qilmagan holda sektor miqyosida jami 8,4 foizlik o'sishni ta'minlashi mumkin.

Yagona keltirilgan shakldagi (reduced-form) tenglama bilan taqqoslanganda, Abituriyentlarni jalb qilish modeli tanlanma ichida nisbatan pastroq moslik darajasini namoyon etadi ($R^2 = 0,969$ ga nisbatan $R^2 = 0,996$), biroq oliy ta'lim muassasasiga xos diagnostik xulosalarni shakllantirish imkonini beradi. Aksincha, keltirilgan shakldagi modelning eng katta koeffitsiyentini qaror qabul qilish qoidasi sifatida qo'llash barcha yigirmata oliy ta'lim muassasasi uchun bir xil tavsiya etiladigan harakatni nazarda tutadi. Ushbu taqqoslash statistik moslikni maksimal darajaga yetkazish bilan konseptual model yordamida muassasaga xos cheklovlar va ularga mos ta'sir yo'nalishlarini aniqlash o'rtasidagi farqni ko'rsatadi.

Kalit so'zlar: konseptual model; abituriyentlarni jalb qilish; oliy ta'lim marketingi; marketing mexanizmi; blok spetsifikligi; cheklovchi omil; tushuntiruvchi modellashtirish; O'zbekiston.

Аннотация. Концептуальные модели в маркетинге высшего образования, как правило, предлагаются и иллюстрируются, однако реже подвергаются непосредственной эмпирической проверке. В данной статье разрабатывается модель привлечения абитуриентов (Applicant Attraction Model), формулируются три вытекающих из неё научных положения и представлены результаты проверки каждого из них на основе панельных данных двадцати высших учебных заведений. Модель концептуализирует привлечение абитуриентов как последовательность фильтров, в которой зачисление выражается как произведение уровня охвата, уровня отбора и уровня верификации.

Первое положение — о мультипликативном характере композиции указанных показателей — представляет собой расчётное тождество и поэтому рассматривается не как эмпирический результат, а как структурное свойство модели. Второе положение — о том, что каждый фактор преимущественно воздействует на определённый блок, — не получило подтверждения в первоначальной трёхблочной спецификации. По трём блокам индекс специфичности каждого фактора находится в диапазоне от 0,374 до 0,503 при базовом уровне отсутствия специфичности, равном 0,333. При упрощении модели до двух блоков — охвата и конверсии — специфичность проявляется только для факторов, связанных с информацией: доля верифицируемых утверждений (verifiable claim share) достигает 0,956, а дистанция доказательности (evidence distance) — 0,950 при базовом уровне отсутствия специфичности 0,500. В то же время показатели рекламных расходов, стоимости обучения и широты образовательных программ остаются в диапазоне 0,540–0,648. Таким образом, результаты эмпирической проверки поддерживают более парсимоничное двухблочное представление для факторов, связанных с информацией, по сравнению с первоначальной трёхблочной спецификацией.

Третье положение — о способности модели локализовать ограничивающий фактор — подтверждается наблюдаемыми закономерностями панельных данных. Охват определяется как ограничивающий фактор в шестнадцати высших учебных заведениях, а верификация — в четырёх. Повышение ограничивающего показателя до медианного уровня по панели обеспечивает расчётный прирост от нуля до 172,7% в разрезе отдельных учреждений и совокупный прирост на уровне сектора в размере 8,4% без необходимости увеличения дополнительных мощностей.

По сравнению с единым уравнением приведённой формы (reduced-form equation) модель привлечения абитуриентов демонстрирует более низкую степень соответствия данным внутри выборки ($R^2 = 0,969$ против $R^2 = 0,996$), однако позволяет получать диагностические выводы, специфичные для отдельных высших учебных заведений. В отличие от этого, использование наибольшего коэффициента модели приведённой формы в качестве правила принятия решения предполагало бы одно и то же рекомендуемое действие для всех двадцати высших учебных заведений. Данное сопоставление демонстрирует различие между максимизацией статистического соответствия и использованием концептуальной модели для выявления специфичных для конкретных учреждений ограничений и соответствующих направлений воздействия.

Ключевые слова: концептуальная модель; привлечение абитуриентов; маркетинг высшего образования; маркетинговый механизм; специфичность блока; ограничивающий фактор; объяснительное моделирование; Узбекистан.

INTRODUCTION

Conceptual models are frequently proposed in higher education marketing, but they are less often subjected to explicit empirical testing. A common approach is to present a conceptual structure, illustrate its components and relationships with an empirical or practical example, and discuss the extent to which the model represents the phenomenon under investigation. Although such approaches can provide useful conceptual insights, models that are not formulated in empirically testable terms offer limited opportunities to evaluate which of their proposed relationships are supported by observed data and which may require revision.

This article develops and empirically evaluates the Applicant Attraction Model, which conceptualises applicant attraction as a sequence of three filters. An institution must first become known to potential applicants, represented by the exposure block. It must then remain within the applicant's set of seriously considered alternatives after the initial narrowing process, represented by the screening block. Finally, an offer must be converted into enrolment, represented by the verification block. Because each block operates on the



applicants who have passed through the preceding block, enrolment is represented as the product of the three corresponding rates rather than their sum.

The model generates three claims of different methodological status, and distinguishing among them is central to the analytical framework of the article. The compositional claim—that the three rates combine multiplicatively—follows directly from the definition of a sequential filtering process and therefore constitutes an accounting identity rather than an empirical finding. The behavioural claim—that each driver acts primarily on a specific block rather than equally across the entire attraction process—is substantive and empirically testable. The diagnostic claim—that the model can identify the block that constitutes the binding constraint for a particular institution—concerns the model's potential use in generating institution-specific diagnostic implications.

The empirical analysis shows that the behavioural claim is not supported in its original three-block specification. Simplifying the model from three blocks to two recovers block specificity for some drivers but not for others, thereby providing an empirical basis for revising the original conceptual structure. The analysis also provides support for the model's ability to localise the binding constraint at the institutional level. In addition, a single reduced-form equation achieves a higher in-sample fit for enrolment than the conceptual model. This difference does not necessarily imply that the two approaches serve the same analytical purpose. Section 4.5 examines this distinction in relation to the established difference between explanatory and predictive modelling.

The article makes three principal contributions. First, it develops an Applicant Attraction Model whose principal substantive propositions are specified in empirically testable terms, allowing the original structure to be evaluated and revised in response to the observed evidence. Second, it introduces the block specificity index, which measures the extent to which the estimated influence of a driver is concentrated within a particular stage of the applicant attraction process and provides an explicit criterion for evaluating the proposed block structure. Third, it demonstrates the distinction between statistical fit and institution-specific diagnostic usefulness: although the conceptual model achieves a lower in-sample fit than the reduced-form specification, it generates differentiated diagnoses across the twenty institutions, whereas applying the dominant relationship from the reduced-form specification as a decision rule would imply a common action across the sample.

LITERATURE REVIEW

MacInnis developed a framework for conceptual contributions in marketing, distinguishing among identifying, delineating, integrating, and differentiating as distinct forms of conceptual thinking [10]. Yadav documented the declining presence of conceptual articles in the field and argued that conceptual work had increasingly come to be treated as preliminary to empirical research rather than as a substantive contribution in its own right [19].

The position adopted in the present study is more specific. A conceptual model can provide additional analytical value when it generates insights into the structure or mechanism underlying an observed relationship that would not be obtained from a reduced-form regression using the same data. One way of evaluating this contribution is to estimate both approaches and compare the types of conclusions and diagnostic implications that each supports.

Shmueli's distinction between explanatory and predictive modelling provides the conceptual basis for this comparison [15]. A model developed primarily for explanation need not provide the strongest predictive performance, while a model with superior predictive performance need not identify the mechanisms through which an intervention may operate. The comparison presented in Section 4.5 applies this distinction to the Applicant Attraction Model and the reduced-form specification.

The hierarchy-of-effects tradition conceptualises communication outcomes as a sequence progressing from awareness towards behavioural response, including purchase [9]. In the context of higher education choice, related sequential structures are reflected in Chapman's model of student college choice and Hossler and Gallagher's three-phase framework of predisposition, search, and choice [2, 8], while Perna's conceptual model situates higher education choice within broader social, economic, and institutional contexts [13].

The consideration-set literature provides a framework for examining the intermediate stage of this process. Hauser and Wernerfelt conceptualised consideration-set formation as a cost-benefit process [5], Roberts and Lattin modelled the composition of consideration sets [14], and Shocker, Ben-Akiva, Boccara, and Nedungadi examined the associated conceptual and measurement issues [16]. In the present model, the screening block represents this consideration-set stage as an institution-level pass rate: among applicants who are aware of an institution, it captures the proportion for whom that institution remains within the set of alternatives seriously considered.

The final block is specified in terms of verification rather than persuasion because higher education services involve substantial informational uncertainty prior to enrolment. Nelson distinguished between search and

experience attributes [12], while Darby and Karni extended this framework by introducing credence attributes, whose quality may be difficult for consumers to evaluate even after consumption [3]. These distinctions provide a useful framework for understanding why prospective applicants may seek evidence that supports institutional claims before making a final enrolment decision.

In this context, the verification block captures the extent to which applicants can assess the credibility of information relevant to their final decision. Spence's signalling framework further provides a theoretical basis for considering how observable and credible signals can convey information when underlying quality is not directly observable [17]. Applied to higher education communication, this perspective suggests that the effectiveness of an institutional claim may depend not only on its content but also on the extent to which applicants can verify or otherwise evaluate the evidence supporting it.

The diagnostic claim draws on the theory of constraints, according to which the performance of a system can be limited by a binding constraint, making the identification of that constraint important for directing improvement efforts [4]. Applied to a sequential filter chain, this logic suggests that the potential effect of an intervention depends on the stage at which the relevant constraint occurs.

In the Applicant Attraction Model, this principle provides the conceptual basis for identifying an institution-specific binding block. Rather than assuming that the same intervention is appropriate for every institution, the model evaluates which stage of the attraction process represents the most restrictive point relative to the observed rates. The empirical implementation of this diagnostic principle is examined in Section 4.

The analysis in Section 4.3 interprets the empirical performance of the middle block partly through the problem of selection between sequential stages. Heckman's treatment of selection bias provides the relevant methodological foundation [6]. In the present setting, an institution-level consideration rate is calculated only among applicants who are already aware of the institution. Consequently, the population entering the screening stage is selected through the preceding exposure stage.

If awareness is systematically associated with institutional attributes that also influence consideration, the observed relationship between a driver and the consideration rate may partly reflect this prior selection. This provides a potential explanation for why the original three-block specification may not produce the degree of block specificity implied by the behavioural claim and motivates the subsequent examination of a more parsimonious block structure.

The higher education marketing literature includes both conceptual models of applicant and student choice and empirical studies estimating relationships between institutional or marketing attributes and observed outcomes [7, 11]. However, comparatively limited attention appears to have been given to designs that formulate the distinct empirical claims of a conceptual marketing mechanism separately, specify criteria by which those claims can be evaluated, and then use the resulting evidence to determine whether the original conceptual structure should be retained or revised.

The present study addresses this intersection by distinguishing among the compositional, behavioural, and diagnostic claims of the Applicant Attraction Model and subjecting the empirically testable claims to separate evaluation. This structure allows the model to be revised in response to the observed evidence rather than treating empirical analysis solely as an illustration of a predetermined conceptual framework. The model revision examined in Section 4.4 follows directly from this approach.

RESEARCH METHODOLOGY

The Applicant Attraction Model conceptualises enrolment at an institution as the outcome of a sequence of rates applied to an initial pool of school leavers. The model distinguishes three principal conceptual blocks—exposure, screening, and verification—while the transition from consideration to an offer additionally incorporates the application rate and the offer rate.

The exposure rate is defined as the proportion of the initial pool that can name the institution as a possible destination. The screening rate is the proportion of those aware of the institution who examine it seriously enough to compare it with other alternatives. The application rate is the proportion of those considering the institution who submit an application. The offer rate is the proportion of applicants who receive an offer; within the model, this is treated primarily as a capacity-related parameter rather than a marketing driver. Finally, the verification rate is the proportion of offer holders who subsequently enrol.

Accordingly, the sequential structure can be expressed as:

Enrolment = Initial Pool × Exposure Rate × Screening Rate × Application Rate × Offer Rate × Verification Rate.

Because each rate is conditional on progression through the preceding stage, the relationship is multiplicative rather than additive. This multiplicative structure is an accounting identity implied by the



construction of the sequential process and is therefore treated as a structural property of the model rather than as an empirical finding.

Table 1 summarises the conceptual blocks, the corresponding rates, and the drivers hypothesised to operate primarily within each block (Table 1).

Table 1
Blocks of the Applicant Attraction Model, Corresponding Rates, and Hypothesised Drivers¹

Block	Rate	Hypothesised drivers
Exposure	Share of the pool aware of the institution	Promotional spending
Screening	Share of the aware who consider it	Programme breadth, location, tuition
Verification	Share of offer holders who enrol	Verifiable claim share, evidence distance
Capacity	Share of applicants receiving an offer	Not a marketing parameter, held fixed

The compositional claim states that enrolment equals the initial pool multiplied by the successive rates in the applicant attraction process. This relationship follows directly from the definition of a sequential filtering process and therefore holds by construction. It is stated explicitly to distinguish an accounting identity implied by the structure of the model from an empirical proposition requiring statistical evaluation.

The behavioural claim states that each driver is associated primarily with the rate corresponding to its hypothesised block rather than being distributed equally across the different blocks. Unlike the compositional claim, this is a substantive and empirically testable proposition. It is evaluated in Section 4.4 using the block specificity index defined below.

The diagnostic claim states that the model can identify, for each institution, the block whose observed rate is furthest from the specified attainable frontier and can thereby distinguish institution-specific areas with the greatest potential for improvement. The empirical implications of this claim are evaluated in Section 4.6.

For each driver, a separate equation is estimated for each stage rate. The dependent stage rate is expressed in logit form, while institutional scale is included as a control variable in each equation. The block specificity index is defined as the largest absolute t statistic across the relevant stages divided by the sum of the absolute t statistics across those stages:

The lower bound of the index depends on the number of blocks being compared. With three blocks, equal absolute t statistics across all three stages produce an index of 0.333; with two blocks, equal absolute t statistics produce an index of 0.500. As the statistical association of a driver becomes increasingly concentrated in a single block relative to the others, the index approaches 1.000.

Reporting the relevant no-specificity benchmark alongside the observed index is therefore important for interpretation. For example, an index of 0.48 may appear to indicate moderate concentration when considered in isolation, but in a three-block comparison it lies relatively close to the equal-contribution benchmark of 0.333. The index should consequently be interpreted relative to its block-specific benchmark rather than as an absolute measure independent of the number of stages being compared.

The Applicant Attraction Model is compared with a single reduced-form equation in which log enrolment is regressed jointly on all included drivers. Two dimensions are examined. The first is in-sample fit, measured by R^2 calculated against observed log enrolment. The second is diagnostic differentiation, measured by the number of distinct institution-specific recommendations generated by each approach across the twenty institutions.

For the Applicant Attraction Model, enrolment is reconstructed using the fitted values from the block equations rather than the observed stage rates. The comparison is therefore made between fitted outcomes generated by the two modelling approaches rather than between a fitted prediction from one approach and an accounting identity constructed from observed rates.

This design allows the statistical fit of the two approaches to be compared while separately examining whether the block structure provides differentiated diagnostic implications across institutions.

All equations are estimated by ordinary least squares using observations from twenty institutions. Group comparisons are conducted using the Welch statistic [18]. Given the small number of institutional observations, the corresponding limitations of statistical inference are recognised throughout the analysis [1]. Accordingly, statistical results are interpreted together with their magnitude and substantive pattern rather than on the basis of statistical significance alone. No causal interpretation is assigned to the estimated relationships.

¹ Author's development

ANALYSIS AND RESULTS

Table 2 reports the mechanism for each institution.

Table 2
The attraction chain, twenty institutions²

Institution	Aware	Consider	Apply	Applications	Offers	Offer rate	Yield	Enrolments
U01	62.0%	70.0%	60.0%	26,040	7,000	26.9%	66.0%	4,620
U02	55.0%	65.0%	52.0%	18,590	5,200	28.0%	78.0%	4,056
U03	48.0%	62.0%	51.0%	15,178	4,400	29.0%	72.0%	3,168
U04	34.0%	72.0%	40.0%	9,792	1,900	19.4%	91.0%	1,729
U05	40.0%	48.0%	45.0%	8,640	2,300	26.6%	58.0%	1,334
U06	42.0%	68.0%	43.0%	12,281	3,100	25.2%	89.0%	2,759
U07	38.0%	56.0%	48.0%	10,214	2,900	28.4%	69.0%	2,001
U08	36.0%	61.0%	43.0%	9,443	3,400	36.0%	66.0%	2,244
U09	26.0%	70.0%	31.0%	5,642	1,200	21.3%	95.0%	1,140
U10	33.0%	52.0%	40.0%	6,864	2,600	37.9%	60.0%	1,560
U11	29.0%	45.0%	38.0%	4,959	1,500	30.2%	64.0%	960
U12	31.0%	48.0%	36.0%	5,357	2,200	41.1%	55.0%	1,210
U13	22.0%	58.0%	24.0%	3,062	900	29.4%	81.0%	729
U14	28.0%	44.0%	34.0%	4,189	1,800	43.0%	58.0%	1,044
U15	24.0%	42.0%	28.0%	2,822	1,000	35.4%	49.0%	490
U16	21.0%	56.0%	28.0%	3,293	1,400	42.5%	69.0%	966
U17	18.0%	50.0%	23.0%	2,070	800	38.6%	72.0%	576
U18	16.0%	41.0%	26.0%	1,706	700	41.0%	53.0%	371
U19	13.0%	38.0%	24.0%	1,186	600	50.6%	44.0%	264
U20	11.0%	36.0%	20.0%	792	400	50.5%	48.0%	192

The sector records a total of 152,119 applications and 31,413 enrolments from an initial pool of 100,000 school leavers. The fact that the number of applications exceeds the size of the initial pool reflects the possibility that an individual applicant may submit applications to more than one institution. Accordingly, the rates are calculated at the institution level and are not mutually exclusive across institutions.

The compositional claim holds by construction and is therefore not interpreted as an empirical finding. Its analytical value lies instead in the decomposition provided by the sequential structure, which forms the basis for the subsequent analysis. A relatively low level of enrolment at a particular institution may be associated with a low exposure rate, a low screening or consideration rate, a low verification rate, or a binding capacity constraint. Distinguishing among these components is important because each represents a different stage of the applicant attraction process and may therefore imply a different diagnostic interpretation.

Table 3 reports the estimated equations for the three blocks of the Applicant Attraction Model.

Table 3
Estimated Block Equations (n = 20)³

Block	Dependent variable	Driver	Coefficient	t	R ²
B1 Exposure	logit awareness	log promotional spend	0.644 (0.047)	13.68	0.912
B2 Screening	logit consideration	log programme breadth	0.420 (0.166)	2.53	0.529
		located in a major city	-0.178 (0.379)	-0.47	

² Author's development

³ Author's development



		log tuition	0.448 (0.265)	1.69	
B3 Verification	logit yield	verifiable claim share	0.045 (0.003)	13.99	0.916
B3 with control	logit yield	verifiable claim share	0.047 (0.004)	12.00	0.920
		log promotional spend	-0.070 (0.071)	-0.99	

Standard errors in parentheses. The first and third blocks behave as the model specifies. Promotional spending explains 91.2 per cent of the variation in awareness at an elasticity of 0.644 with a t statistic of 13.68. Verifiable claim share explains 91.6 per cent of the variation in yield, and it survives the addition of promotional spending, which contributes minus 0.070 with a t statistic of minus 0.99. Money buys awareness and does not buy take-up (Figure 1).

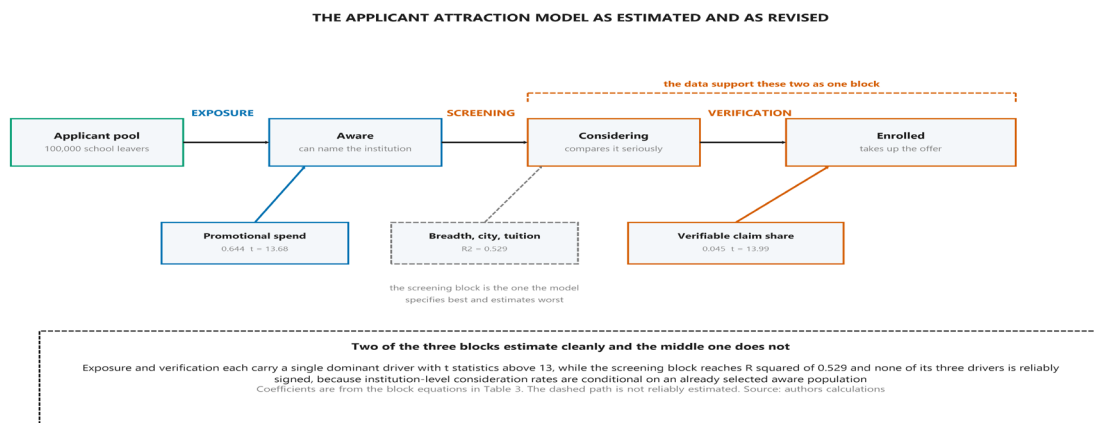


Figure 1. The model as estimated⁴

The implication for the Applicant Attraction Model is specific to the empirical identification of the screening block rather than to its conceptual role. The screening stage remains conceptually relevant to the sequential attraction process, but the institution-level data used in the present analysis provide limited information for isolating its hypothesised drivers from selection occurring at the preceding exposure stage. More direct identification of this process would require applicant-level information on the composition of consideration sets and on the institutions known to and considered by individual applicants. Such data would require a different measurement instrument rather than merely an alternative specification of the same institution-level data.

Table 4 reports the block specificity index for the original three-block specification and the revised two-block specification.

Table 4
Block Specificity Index by Driver⁵

Driver	Three blocks	Two blocks	Acts on, two-block version
Verifiable claim share	0.483	0.956	Conversion only
Evidence distance	0.487	0.950	Conversion only
Located in a major city	0.503	0.681	Exposure only
Log tuition	0.475	0.648	Both
Log programme breadth	0.453	0.641	Both
Log promotional spend	0.374	0.540	Both
No-specificity floor	0.333	0.500	

⁴ Author's development

⁵ Author's development

Figure 2 compares the block specificity index for the individual drivers under the original three-block specification and the revised two-block specification. In the three-block model, the observed specificity indices remain relatively close to the no-specificity benchmark of 0.333. The index is 0.374 for log promotional expenditure, 0.453 for log programme breadth, 0.475 for log tuition, and 0.503 for location in a major city. These results provide limited evidence that the effects of these drivers are concentrated within the individual blocks to which they were originally assigned.

When the model is simplified to two blocks, the no-specificity benchmark increases to 0.500. The specificity indices for log promotional expenditure, log programme breadth, and log tuition increase to 0.540, 0.641, and 0.648, respectively. Location in a major city reaches 0.681. Although these values indicate greater concentration than in the three-block specification, the degree of specificity remains heterogeneous across the drivers (Figure 2).

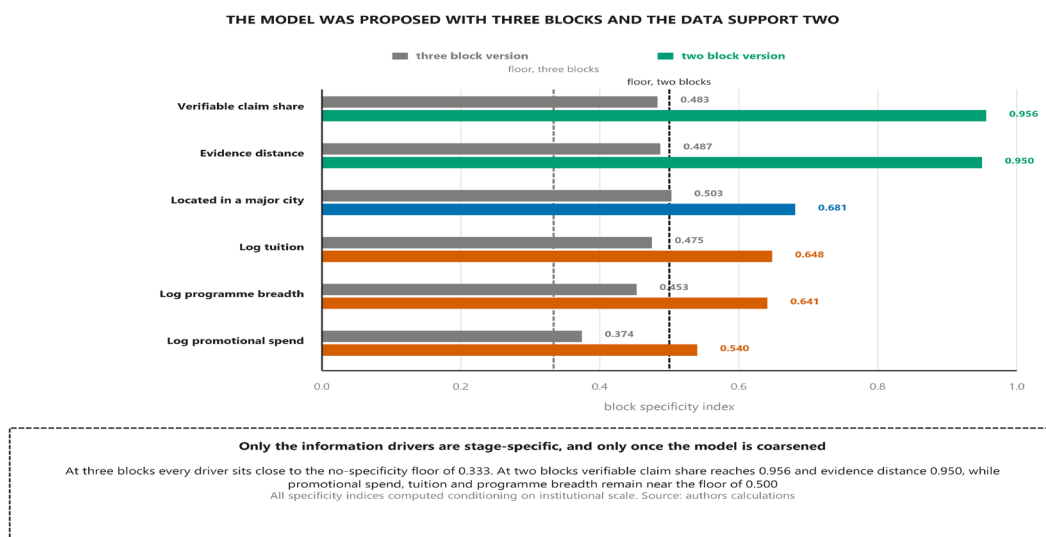


Figure 2. Block specificity by driver in the three-block and two-block versions, with the floor for each⁶

Under the original three-block specification, the behavioural claim receives limited empirical support. Across the six drivers, the block specificity index ranges from 0.374 to 0.503, compared with the no-specificity benchmark of 0.333. Thus, none of the six drivers exhibits strong concentration within a single block. These results do not support the original proposition that individual drivers are clearly stage-specific—for example, that promotional expenditure is concentrated primarily in the exposure block, tuition in the screening block, and verifiable information in the verification block.

Simplifying the model to two blocks changes the pattern for some drivers but not for others. When the screening and verification stages are combined into a single conversion block, the model consists of exposure followed by conversion. Under this specification, the block specificity index for verifiable claim share increases to 0.956 and that for evidence distance to 0.950, relative to a no-specificity benchmark of 0.500. These two information-related drivers therefore exhibit a high degree of concentration in the conversion block. Their *t* statistics are 23.18 and –13.39, respectively, for conversion, compared with 1.08 and –0.70 for exposure. Location in a major city reaches a specificity index of 0.681, with its estimated association more strongly concentrated in the exposure block. By contrast, tuition, programme breadth, and promotional expenditure have specificity indices ranging from 0.540 to 0.648, indicating that their estimated associations remain distributed across both blocks rather than being strongly concentrated within a single stage.

The revision of the model is therefore based on the results of the empirical test rather than on an a priori preference for a simpler structure. The evidence provides stronger support for a two-block representation in which the information-related drivers—verifiable claim share and evidence distance—are clearly stage-specific, while the resource-related drivers exhibit substantially less block specificity. The revised specification is more parsimonious and makes a narrower behavioural claim than the original three-block model. This revision illustrates the value of specifying conceptual propositions in empirically testable terms: when the original proposition is not supported as specified, the model can be modified in accordance with the observed evidence rather than retained unchanged.



Table 5 presents the resulting comparison between the original three-block specification and the revised two-block specification.

Table 5
The model against a reduced form⁷

	Reduced form	Applicant Attraction Model
Specification	log enrolments on all drivers	enrolments reconstructed from fitted block equations
R ² against observed log enrolments	0.996	0.969
Adjusted R ²	0.995	
Largest significant coefficient	log programme breadth, 0.758 (t = 7.94)	
Distinct recommendations across twenty institutions	one	two blocks, twenty magnitudes

The reduced-form specification provides a substantially higher in-sample fit than the Applicant Attraction Model. Its R² is 0.996, compared with 0.969 for the conceptual model. It achieves this fit without imposing the sequential block structure of the Applicant Attraction Model and without requiring the separate estimation of relationships across the individual blocks. In terms of statistical fit alone, therefore, the reduced-form specification describes the observed variation in log enrolments more closely within the sample.

The two approaches differ, however, in the type of diagnostic information they provide. In the reduced-form specification, the largest statistically significant coefficient is associated with programme breadth, with an estimated coefficient of 0.758. If the magnitude of the largest statistically significant coefficient were used as the basis for identifying a priority area for intervention, the same variable—programme breadth—would be selected for all twenty institutions. The reduced-form equation therefore does not, under this decision rule, differentiate the recommended priority according to the institution-specific stage at which the attraction process is most constrained.

The Applicant Attraction Model serves a different analytical purpose. Rather than identifying a single relationship from the pooled institutional data and applying it uniformly across institutions, the model decomposes the attraction process into sequential stages and identifies the stage that is most restrictive for each institution relative to the specified benchmark. It therefore generates institution-specific diagnostic implications, which are examined through the binding-constraint analysis reported in Table 6.

The comparison should not be interpreted as demonstrating the general superiority of one modelling approach over the other. The reduced-form specification provides the stronger in-sample statistical fit, whereas the conceptual model provides a structured decomposition intended to localise institution-specific constraints. The results therefore illustrate a distinction between statistical fit and diagnostic differentiation: a model with a lower in-sample R² may still provide information about the location of a constraint that is not directly represented by a single reduced-form equation.

Table 6 reports the binding block identified for each institution and the corresponding counterfactual change.

Table 6
Binding block and the effect of raising it to the panel median⁸

Institution	Exposure ratio	Screening ratio	Verification ratio	Binding block	Enrolments now	After	Change
U20	0.18	0.50	0.51	Exposure	192	524	+172.7%
U19	0.21	0.53	0.46	Exposure	264	609	+130.8%
U18	0.26	0.57	0.56	Exposure	371	696	+87.5%
U17	0.29	0.69	0.76	Exposure	576	960	+66.7%
U16	0.34	0.78	0.73	Exposure	966	1,380	+42.9%
U13	0.35	0.81	0.85	Exposure	729	994	+36.4%
U15	0.39	0.58	0.52	Exposure	490	613	+25.0%

⁷ Author's development

⁸ Author's development

U09	0.42	0.97	1.00	Exposure	1,140	1,315	+15.4%
U05	0.65	0.67	0.61	Verification	1,334	1,518	+13.8%
U14	0.45	0.61	0.61	Exposure	1,044	1,119	+7.1%
U11	0.47	0.63	0.67	Exposure	960	993	+3.4%
Ten others				Exposure or Verification			none
Sector					31,413	34,067	+8.4%

Ratios are each stage rate divided by the panel maximum for that stage. Institutions showing no change already hold their binding rate at or above the panel median (Figure 3).

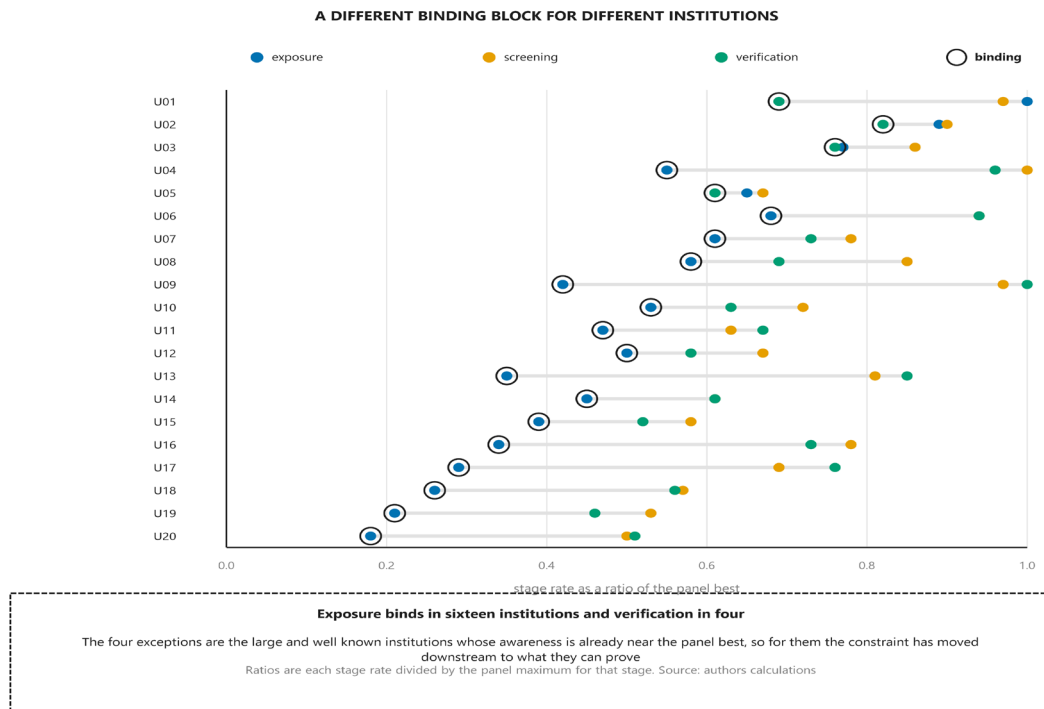


Figure 3. Stage rates as ratios of the panel best, with the binding block ringed⁹

Exposure binds in sixteen of the twenty institutions and verification in four. The four exceptions are the large institutions whose awareness is already near the panel maximum, so for them the constraint has moved downstream to what they can prove (Figure 4).

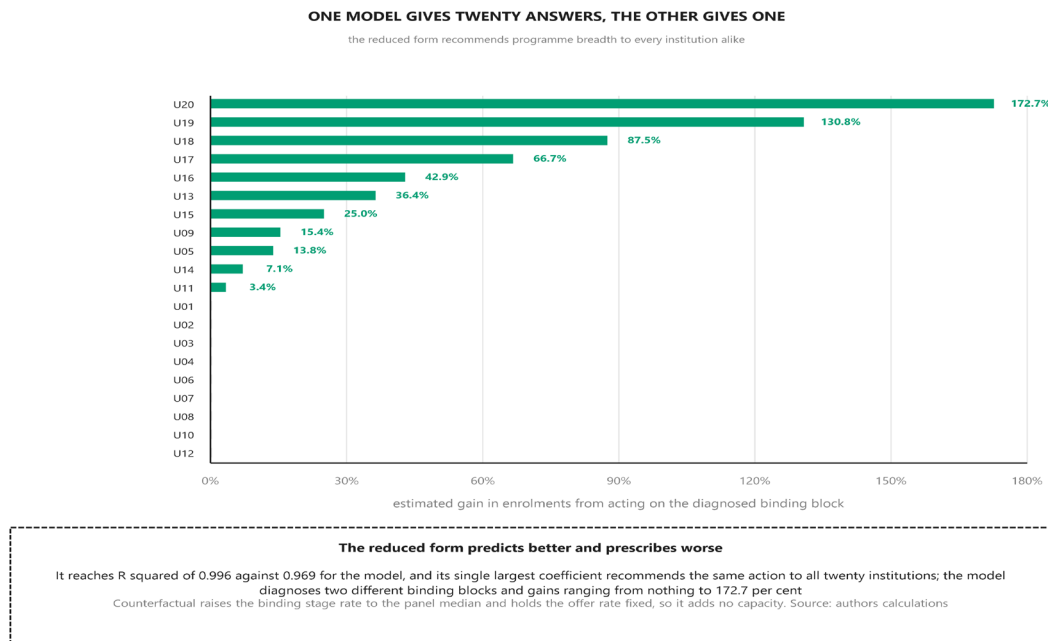


Figure 4. Estimated gain from acting on the diagnosed binding block, by institution¹⁰

The Applicant Attraction Model identifies different binding constraints across the twenty institutions. Exposure is identified as the binding block in sixteen institutions, while verification is identified as binding in four. In the counterfactual exercise, the rate associated with the binding block is raised to the corresponding panel median while the remaining rates are held constant.

The estimated changes in enrolment vary substantially across institutions. Raising the binding rate to the panel median produces no estimated increase for nine institutions, an increase of 3.4 per cent for one institution, and a maximum increase of 172.7 per cent for another. Aggregated across the twenty institutions, the counterfactual implies an 8.4 per cent increase in sector-level enrolment without an increase in the capacity parameter. By contrast, applying the largest statistically significant coefficient from the reduced-form specification as a common decision rule would identify the same priority variable for all twenty institutions.

These results provide support for the diagnostic role of the model within the present analytical framework. The model differentiates institutions according to the stage at which their attraction process is most constrained, even though the revised model is more parsimonious than the original three-block specification. The components of the original model that receive limited empirical support are themselves informative about the level of structural differentiation that can be identified using the available institution-level data.

The compositional claim is an accounting identity and therefore does not constitute empirical evidence in support of the model. Its role is instead to define explicitly the sequential structure on which the subsequent behavioural and diagnostic analyses are based.

The behavioural claim receives limited support in the original three-block specification and substantially stronger support for particular drivers after the model is simplified to two blocks. The pattern is systematic. The information-related drivers—verifiable claim share and evidence distance—are strongly concentrated in the conversion block, with specificity indices of 0.956 and 0.950, respectively. By contrast, the resource- and position-related drivers—promotional expenditure, tuition, and programme breadth—remain less stage-specific, with estimated associations distributed across both blocks. Controlling for institutional scale reduces the potential influence of size differences, but the observed cross-block relationships remain.

The diagnostic claim receives support from the institution-specific patterns generated by the model. Whereas the reduced-form specification provides the stronger in-sample statistical fit, the Applicant Attraction Model distinguishes between exposure and verification constraints across institutions. The two approaches therefore provide different types of information: the reduced-form equation describes the observed variation in enrolment more closely within the sample, while the conceptual model provides a structured basis for identifying institution-specific constraints.

An important limitation of the counterfactual analysis should nevertheless be made explicit. The exercise in

¹⁰ Author's development

this section assumes that the rate of the binding stage can be raised to the panel median while the other rates remain unchanged. However, the block-specificity results in Section 4.4 indicate that three of the six drivers are associated with more than one block. An intervention intended primarily to affect exposure—for example, an increase in promotional expenditure—may therefore also be associated with changes in conversion. The counterfactual isolates the potential contribution of the binding rate under a *ceteris paribus* assumption and should not be interpreted as a causal estimate of the effect of a specific intervention.

Accordingly, the institution-level percentages are most appropriately interpreted as diagnostic counterfactuals indicating the relative scope for improvement under the model's assumptions, rather than as forecasts of the gains that would necessarily result from particular interventions. The identification of the lowest relative stage rate provides a basis for prioritising further investigation, while the magnitude of any realised effect would depend on how a specific intervention influences multiple stages of the attraction process.

CONCLUSION AND RECOMMENDATIONS

This article developed and empirically evaluated the Applicant Attraction Model, which represents applicant attraction as a sequential process linking exposure, screening, application, capacity-related offer formation, and verification. Enrolment is expressed as the product of the successive rates in this process. Three claims—the compositional, behavioural, and diagnostic claims—were evaluated using data from twenty institutions.

The compositional claim is an accounting identity that follows from the sequential construction of the model and therefore does not constitute empirical evidence in support of the model. Its purpose is to define the structure through which the subsequent behavioural and diagnostic propositions are examined.

The exposure and verification blocks exhibit strong statistical relationships with their hypothesised information. Promotional expenditure is associated with variation in awareness, with an estimated elasticity of 0.644, a *t* statistic of 13.68, and $R^2 = 0.912$. Verifiable claim share is positively associated with yield, with an estimated coefficient of 0.045, a *t* statistic of 13.99, and $R^2 = 0.916$. This relationship remains strong when promotional expenditure is added to the specification, while promotional expenditure has an estimated coefficient of -0.070 with a *t* statistic of -0.99 in that equation.

The screening block provides substantially weaker and less consistent empirical results. Its equation has $R^2 = 0.529$, and the estimated coefficients of its hypothesised drivers do not display a consistent pattern in the expected directions. In particular, tuition has a positive estimated coefficient, contrary to its hypothesised direction as a screening variable. This pattern is consistent with selection between sequential stages: institution-level consideration rates are calculated among applicants who are already aware of an institution. The available data, however, do not independently establish selection as the causal source of the coefficient pattern.

The behavioural claim therefore receives limited support in its original three-block specification. Across the six drivers, the block specificity index ranges from 0.374 to 0.503, compared with a no-specificity benchmark of 0.333. When the model is simplified to two blocks, verifiable claim share reaches a specificity index of 0.956 and evidence distance reaches 0.950, relative to a benchmark of 0.500. Promotional expenditure, tuition, and programme breadth remain between 0.540 and 0.648. These results provide stronger support for a two-block representation in which the information-related drivers are highly stage-specific, while the resource-related drivers exhibit substantially less block specificity.

The reduced-form specification provides a higher in-sample fit than the Applicant Attraction Model, with $R^2 = 0.996$ compared with $R^2 = 0.969$. This comparison indicates that the conceptual model should not be regarded as superior on the basis of statistical fit. Its contribution instead lies in the structured decomposition of the applicant attraction process and the institution-specific diagnostic information generated by that decomposition.

The diagnostic analysis identifies exposure as the binding block in sixteen institutions and verification in four. Raising the binding rate to the corresponding panel median while holding the remaining rates constant produces counterfactual changes ranging from zero to 172.7 per cent across institutions and an aggregate sector-level increase of 8.4 per cent without increasing the capacity parameter. By contrast, applying the largest statistically significant coefficient from the reduced-form specification as a common decision rule would identify the same priority variable for all twenty institutions.

Taken together, the findings support a more parsimonious version of the Applicant Attraction Model than originally proposed. The empirical evidence does not support strong stage specificity for all drivers in the three-block structure, but it provides substantially clearer differentiation for the information-related drivers in the revised two-block specification. At the same time, the model provides an institution-specific framework for identifying where constraints are concentrated. The results therefore illustrate the value of treating a conceptual model as an empirically revisable structure rather than as a framework to be retained unchanged irrespective of the evidence.



REFERENCES

1. Cameron A.C., Miller D.L. A practitioner's guide to cluster-robust inference // *Journal of Human Resources*. – 2015. – Vol. 50, № 2. – P. 317–372.
2. Chapman D.W. A model of student college choice // *Journal of Higher Education*. – 1981. – Vol. 52, № 5. – P. 490–505.
3. Darby M.R., Karni E. Free competition and the optimal amount of fraud // *Journal of Law and Economics*. – 1973. – Vol. 16, № 1. – P. 67–88.
4. Goldratt E.M., Cox J. *The Goal: A Process of Ongoing Improvement* / E.M. Goldratt, J. Cox. – Great Barrington: North River Press, 1984.
5. Hauser J.R., Wernerfelt B. An evaluation cost model of consideration sets // *Journal of Consumer Research*. – 1990. – Vol. 16, № 4. – P. 393–408.
6. Heckman J.J. Sample selection bias as a specification error // *Econometrica*. – 1979. – Vol. 47, № 1. – P. 153–161.
7. Hemsley-Brown J., Oplatka I. Universities in a competitive global marketplace: A systematic review of the literature on higher education marketing // *International Journal of Public Sector Management*. – 2006. – Vol. 19, № 4. – P. 316–338.
8. Hossler D., Gallagher K.S. Studying student college choice: A three-phase model and the implications for policymakers // *College and University*. – 1987. – Vol. 62, № 3. – P. 207–221.
9. Lavidge R.J., Steiner G.A. A model for predictive measurements of advertising effectiveness // *Journal of Marketing*. – 1961. – Vol. 25, № 6. – P. 59–62.
10. MacInnis D.J. A framework for conceptual contributions in marketing // *Journal of Marketing*. – 2011. – Vol. 75, № 4. – P. 136–154.
11. Maringe F. University and course choice: Implications for positioning, recruitment and marketing // *International Journal of Educational Management*. – 2006. – Vol. 20, № 6. – P. 466–479.
12. Nelson P. Information and consumer behavior // *Journal of Political Economy*. – 1970. – Vol. 78, № 2. – P. 311–329.
13. Perna L.W. Studying college access and choice: A proposed conceptual model // *Higher Education: Handbook of Theory and Research* / ed. by J.C. Smart. – Dordrecht: Springer, 2006. – Vol. 21. – P. 99–157.
14. Roberts J.H., Lattin J.M. Development and testing of a model of consideration set composition // *Journal of Marketing Research*. – 1991. – Vol. 28, № 4. – P. 429–440.
15. Shmueli G. To explain or to predict? // *Statistical Science*. – 2010. – Vol. 25, № 3. – P. 289–310.
16. Shocker A.D., Ben-Akiva M., Boccara B., Nedungadi P. Consideration set influences on consumer decision-making and choice: Issues, models, and suggestions // *Marketing Letters*. – 1991. – Vol. 2, № 3. – P. 181–197.
17. Spence M. Job market signaling // *Quarterly Journal of Economics*. – 1973. – Vol. 87, № 3. – P. 355–374.
18. Welch B.L. The generalization of Student's problem when several different population variances are involved // *Biometrika*. – 1947. – Vol. 34, № 1–2. – P. 28–35.
19. Yadav M.S. The decline of conceptual articles and implications for knowledge development // *Journal of Marketing*. – 2010. – Vol. 74, № 1. – P. 1–19.

muhandislik **& iqtisodiyot**

ijtimoiy-iqtisodiy, innovatsion texnik,
fan va ta'limga oid ilmiy-amaliy jurnal

Ingliz tili muharriri: Feruz Hakimov

Musahhih: Zokir Alibekov

Sahifalovchi va dizayner: Abdurahmon Qurbonov

2026. № 9

© Materiallar ko'chirib bosilganda "Muhandislik va iqtisodiyot" jurnali manba sifatida ko'rsatilishi shart. Jurnalda bosilgan material va reklamalardagi dalillarning aniqligiga mualliflar ma'sul. Tahririyat fikri har vaqt ham mualliflar fikriga mos kelamasligi mumkin. Tahririyatga yuborilgan materiallar qaytarilmaydi.

"Muhandislik va iqtisodiyot" jurnali 26.06.2023-yildan
O'zbekiston Respublikasi Prezidenti Adminstratsiyasi huzuridagi
Axborot va ommaviy kommunikatsiyalar agentligi tomonidan
№S-5669245 reyestr raqami tartibi bo'yicha ro'yxatdan o'tkazilgan.
Litsenziya raqami: №095310.

**Manzilimiz: Toshkent shahri Yunusobod
tumani 15-mavze 19-uy**





+998 93 718 40 07



<https://muhandislik-iqtisodiyot.uz/index.php/journal>



t.me/yait_2100