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Student-Conducted Research in the Mission of the American Universities versus the Universities in Ukraine

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Abstract

The *purpose* of the study was to analyse the mission statements of the universities from America and Ukraine to identify how student-conducted research is represented in the different types of higher education institutions' missions. The study utilised the exploratory design and relied on qualitative data drawn from content analysis which were then transformed into quantitative data. The study analysed the content of the mission statements of 46 U.S. leading universities and 10 Ukrainian universities included in a feasible list. The content analysis of mission statements of classical (conventional) universities, corporate universities, public research universities, and ultimate digital learning universities was performed using Voyant Tools. The research occupies the leading position in the missions of corporate universities, public research universities in America, and classical and research universities in Ukraine. The university missions are formulated with regard to the social demand, and political and economic trends in the country and the world. The missions of the American universities are more diverse than the missions of the Ukrainian universities which suggests that the American universities have more freedoms than the Ukrainian ones. The post-industrial stage of education is at its peak of development in America while in Ukraine it is emerging. The research in Ukraine is conducted by separate research institutions. This supposes that the university (student-performed) research does not get enough attention and support. The American higher education model has become a standard model in Ukraine. Further research is needed to address the legislation loopholes of supporting the research at the universities.

Keywords: Higher education, university, mission, student-conducted research, American universities, Ukrainian universities.

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Introduction

The study of the evolution and transformation of the mission of the American University to specify the strategic and conceptual trends in the knowledge society settings is currently a topic of increased scientific interest worldwide, and in Ukraine, in particular (Cole, 2010; Cole, 2016; Engwall, 2020; Sbruieva, 2015). Such consolidation purpose review is becoming more significant in the view of the fact that American universities are considered to be models of constant shaping the learning environment, education management, and research management to the rest of the world (Loo, 2018; Pasque, 2010). Additionally, mutual understanding of the essence of “university mission” by all education stakeholders such as educational service providers, service consumers, employers, policy-makers, and legislators can help adjust educational structures and process to transformations of the society so that the educational outcomes contribute to the well-being of the public (Desjardins, 2015). Student-conducted research seems to be the key driver of those transformations. The undergraduates’ research that relies on inter-, multi- or transdisciplinary contexts benefits the society in creating new knowledge and breeding a new generation of tomorrow’s problem solvers which fits the universities’ triple mission (Akker & Spaapen, et. al. 2017). Despite the above trend, the universities in Ukraine are found to underperform in student-conducted research which creates the gap and ground for examining best practices of the American higher education institutions to adapt or borrow them (Kniazian, 2020). The specifics of educational and research systems, which in Ukraine of the post-Soviet regime are the separate branches such as higher educational institutions, on the one hand, that are involved in training students and in engaging them nominally in the research projects (to be usually priceless and useless) and research institutes, on the other hand, that are ‘specialised’ in conducting the research, contradicts the common international practice that relies on both branches. For this reason, the study of the best practice of the student-conducted research in the American university seen as an integral part of both its mission and its activity is considered a rationale.

Literature review

The review found that missions of both the American university and the Ukrainian university rely on the best practices of the European universities. It was also identified what specifically altered in it due to the industrial revolution, the emergence and transition to liberal democratic governance, the creation of the post-war welfare state, and the impacts it caused to the society and driven by its needs.

The historical analysis resulted in six university missions or their transformations (redesigns) defined by the historical period, type of higher education institution, the system of management, and ownership (Jacob *et.al.*, 2015; Sbruieva, 2015; Grøtta, 2019; Engwall, 2020; Rury & Tamura, 2019:262-265). Those missions are multi-purposed and multi-levelled. They encapsulate the continually changing philosophical ideals, the principles and government policies in the educational sphere, and the particular society’s shared values, or the goals of certain scholarly societies, academic associations, and educational institutions. The review found that *service* (its type, purpose, and supposed outcome) has been the key domain to a mission of any type of educational institution throughout three key stages such as before the nation-state stage (prior to the 18th century), nation-state, and early globalisation stage (18-20th centuries), and the globalisation and great convergence stage driven by ICT revolution and enhancement in international knowledge diffusion (21st century) (Poggi, 2017).

The abstract visualisation of the transformation of the University mission is presented in Figure 1.

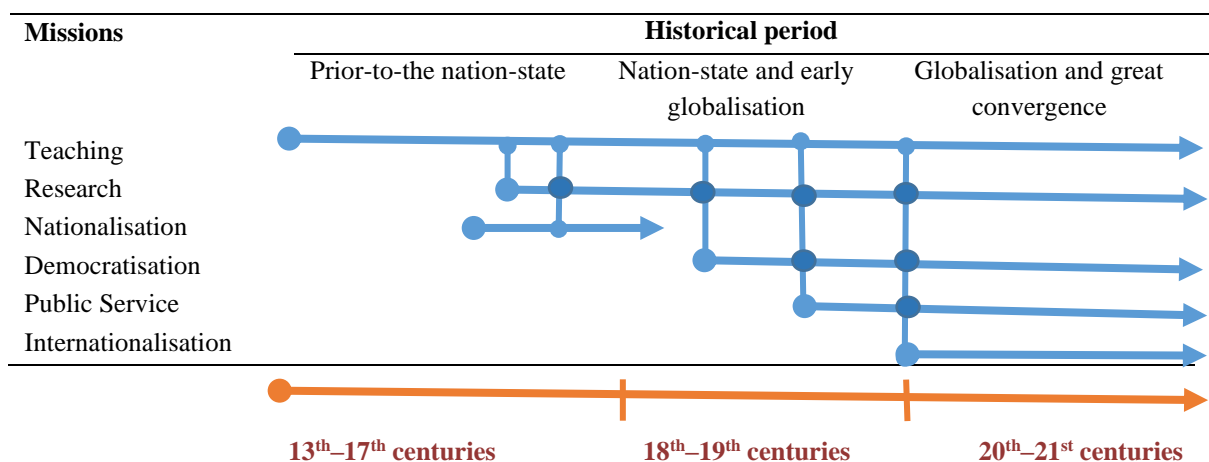


Figure 1: The abstract visualisation of the transformation of the university mission and its multilayeredness

Additionally, the drivers for the transformation of the university missions were the needs for “civil and church servants (clerks)” to perform the administrative duties in churches, secular states, and municipalities. The need for traditional “professions” also shaped the education institutions’ missions. It is noteworthy that the early globalisation stage saw a decline in society’s perception of university education as the one which could be accessed only by elite social circles.

Studying the mission of the universities in America and Ukraine at the period preceding the industrial revolution, it was discovered that there were no national academic standards at higher educational institutions. However, the mission concept and principles emerged and were comparatively common though different models of those educational organisations. The early higher educational institutions relied on an adopted continental (European) university model with the humanist ontology dominating in teaching, service missions, and the research. Overall, the universities models in America originated from the Oxford ideal of classic undergraduate education based on liberal arts, the professional schools of (medieval) tradition, the university model of research and graduate education imported from Germany, the Scottish university model that was distinguished by accessibility and social service accompanied by the similar land grant model, and the Massey concept of nation-building and national culture (Calhoun, 2011; Zajda, 2015). The teaching mission relied on liberal education principles that were intended “to cultivate intellectual creativity, autonomy, and resilience; critical thinking; a combination of intellectual breadth and specialised knowledge; the comprehension and tolerance of diverse ideas; informed participation in community life; and effective communications skills” (Axelrod, 2002, p.34-35). Scholasticism made the core of the undergraduate curriculum aimed at reinforcing the republican values of liberty and self-governance in young people through strict discipline and cramming the liberal arts subjects with no labs and few discussions. This was believed the way to gain political independence of America from British rule (Schulz, 1990).

The trend of democratisation mission and internationalisation mission of higher education institutions in America resulted in a new discourse that is referred to as “knowledge society” and in a new public debate over a U.S. meritocracy based upon a quantitative assessment. The democratisation trend in higher education in Ukraine that was further incorporated in the university mission emerged after the ratification of the EU-UA agreement on joining the Bologna Process in 2006. It is also a keynote of the current educational reform in Ukraine.

The research mission was adopted by Johns Hopkins institutions from Germany in the 19th century and it has dominated U.S. universities compared to the teaching mission being secondary in American universities. Interestingly, this mission integrated and balanced teaching and research, created an environment of academic freedom for professors and students in terms of teaching, learning, and research, introduced specialist’s lecture and laboratory instruction, expanded the fields of study, and

gave rise to the applied research. In the “information age” and “knowledge society” settings, the purpose of the university is to produce (research mission) and transmit (teaching and public service missions) the bulk of society’s new information to the new generation. Although, the knowledge society-driven research mission faces a number of issues such as reinforcement of law regulating intellectual property rights, transfer of technology, operation of by-product companies, competition within and among nation-states, corporate, and government research, it is recognised by societies for producing a skilled workforce, enabling the growth of the economy, improving health care, and encouraging knowledge production. In Ukraine, the research mission in universities is a quite recent trend that appeared at the beginning of the 21st century. However, there are a lot of research institutes in Ukraine whose role in the innovation activity is questionable, but they compete with the universities and often slow down or block the research initiatives of the universities.

The *purpose* of the study was to analyse the mission statements of the universities from America and Ukraine to identify how student-conducted research is represented in the different types of higher education institutions’ missions.

The research questions were as follows: 1) to identify what place the research occupies in the missions of classical (conventional) universities, corporate universities, public research universities, and ultimate digital learning universities in both countries; 2) how the above is related to the social, political and economic environment.

Methodology

The study utilised the exploratory design and relied on qualitative data drawn content analysis which were then transformed into quantitative data. The content of the mission statements of 46 U.S. leading universities and 10 Ukrainian universities included in a feasible list was analysed. The semi-structured literature review of electronic and print scientific sources, ‘grey literature’, and non-scientific sources that employed the keywords search strategy found the data that allowed tracing how the mission of the American and Ukrainian universities changed throughout the history. The below data are presented from the perspective that the university mission relies on three overlapping domains such as teaching, research, and public service viewed through the pedagogical discourse (Sbruieva, 2015; Mitchell, 2016).

Selection of institutions

The universities were selected using the QS World University Rankings® 2019 (n.d.) base dataset. The selected universities were as follows: 11 classical (traditional or conventional) universities, 12 corporate universities, 8 entrepreneurial universities, 12 public research universities, and 3 ultimate or partially digital learning universities with approximately the same academic reputation; employer reputation; faculty/student ratio; citations per faculty; international faculty ratio; and international student ratio. In Ukraine, the universities were selected through the website Osvita.ua. The list of the two existing types of universities comprised 5 research universities and 5 classical universities.

American universities

Classical (conventional) universities

The University of Dallas, the Concordia University Wisconsin, Belhaven University, Seattle Pacific University, Torrey Honors Institute for Biola University, Brandeis University, Baylor University, Colgate University, Eastern University, Furman University, & LeTourneau University.

Entrepreneurial universities

The University of Southern California, University of Virginia, University of Nebraska Medical Center’s Entrepreneur in Residence, The University of Pittsburgh, The University of Wisconsin-Madison, The University of California at San Diego, Utah State University, and Purdue University.

Corporate universities

Disney University, the Kettering University (former General Motors Engineering and Management Institute), the Corporate University of General Electric Company, McDonald's Hamburger University, Apple University, the Defense Acquisition University, Trump University, Motorola University, UniCredit's UniManagement USA Corporate University, the ArcelorMittal USA University, Florida International University, and Business Technology Academy (BT Academy).

Research public universities

Arizona State University, Auburn University, The State University of New York at Binghamton, Clemson University, Colorado State University, The Graduate School and University Center of the City University of New York, Florida International University, Florida State University, George Mason University, The Georgia Institute of Technology, Michigan State University, and Oregon State University.

Digital universities

American Digital University, New York University, and The University of Texas at Dallas Richardson.

Ukrainian universities

Research universities

Lviv Polytechnic National University, Kyiv National Economic University, National University of Kyiv-Mohyla Academy, National Technical University of Ukraine "Igor Sikorsky Kyiv Polytechnic Institute", and Yaroslav Mudryi National Law University.

Classical Universities

V.N. Karazin Kharkiv National University, "KROK" University of Economics and Law, Uzhhorod National University, Vasyly' Stus Donetsk National University, and Sumy State University.

Instruments

The content analysis of mission statements of classical (conventional) universities, corporate universities, public research universities, and ultimate digital learning universities was performed using Voyant Tools (VTs) (n.d.). VTs Software is open-source and web-based. It analyses the text corpus and uses more than 20 visualisation tools, which allows investigating patterns of words/concepts (Sinclair & Rockwell, 2015). The VTs Software Studies has been recently used for research purposes and for those studies that are published in peer-reviewed journals (Boyle & Hall, 2016). The code of the VTs is accessible at GitHub (GitHub, n.d.).

Results and Discussion

The content analyses of the mission statements of the universities from America and Ukraine identified that the student-conducted research was represented in missions of different types of higher education institutions' missions. Below presented are the results of the analyses revealing what place the research occupies in the missions of classical (conventional) universities, corporate universities, public research universities, and ultimate digital learning universities in both countries and how the above is related to the social, political and economic environment in two countries.

It was found that the classical (conventional) university concept relies on the personality of the instructor, who guides regimented learning instead of acting as a facilitator for cohort discovery groups. The university of this kind employs the "60-30-10" teaching and learning model meaning that 60% of the student's time is spent on participating in lectures, reading, memorising, processing, and reproduction of the information; 30% of their time is used for self-study, and 10% of their time the students use to conduct the research projects, discussion meetings, and debates (Stefani, 2009, p.40-57). The general intellectual skills and capacities are dominant in the curriculum learning outcomes. The curriculum is designed using Bloom's Taxonomy-based classification system.

expected to be more entrepreneurial in promoting their services, disseminating their research results, and launching new knowledge-based commercial projects (Wasser, 2001). According to Etzkowitz (2004), Etzkowitz and Leydesdorff (2000), Laukkanen (2000) and Peris-Ortiz et al. (2017), economic and social development are becoming a part of the university missions in addition to teaching and research. The ‘how-teaching methodology’ is central to the programmes run at this kind of university and based on the role models and the academic-university rewards systems. They are the environmental factors used to shape the student-teacher and student-student interaction (Meyer, 2002). Internationalisation is also a key factor in the entrepreneurial university strategy and mission. It comprises the international mobility of students and personnel, involving international entrepreneurial staff, demonstrating internationalisation in teaching and participating in international networks. The entrepreneurial university relies on the “60–20–20” teaching/training and learning model. It means that students spend 60% of the training time on the tutor-supervised project work, 20% of the time is spent on learning the theory, and 20% of the time is dedicated to research (analytics of the competitors and market) (Gianiodis & Meek, 2019).

We shortlisted eight entrepreneurial US-affiliated or based universities and analysed their mission statements or strategic/corporate plans. The content analysis of the mission statements showed that the most frequent words in the corpus were: knowledge, research, human, programmes, and public (see Fig 3.). As can be seen, the research goes second in the mission statements of the entrepreneurial universities.



Figure 3: The frequently used words in the mission statements of the shortlisted entrepreneurial universities

The results of the correlations of the analysis of the five most frequently used terms are presented in Table 2.

Table 2: The results of correlations of analysis of the terms

Term 1		Term 2	r	p-value
knowledge	← →	professional/creative	0.894	0.66631131
research	← →	communities/transforming	0.712	0.48795003
human	← →	public	0.681	0.01470162
programmes	← →	transforming/communities	0.668	0.18940367
public	← →	value	0.674	0.24150397

Note: p<.05

The results of content analyses of the *mission statements of the entrepreneurial university* brought us to the conclusion that its mission is to engage the students in the learning process through professional and creative activity related to the research. The expected outcome of that activity is to bring some positive change to the community. The mission relies on the idea of making good to the public by the individual through specifically organised programmes.

Concerning a corporate university, the one first appeared in the USA in 1919 and the number of this type of university grew rapidly for economic reasons and for they struggled for human resources. Conceptually, they were introduced to be alternative to classic (conventional) university concepts and a way to adapt to the rapidly changing business environment. They are characterised by the in-house form of training, being a combining element of the corporation, by being funded by the corporation (company), and pursuing the same objectives as the corporation (company). It employs the “70–20–10” L&D Model (70-20-10 Verses the 3-33, 2013) supposing that 70% of trainee’s time is dedicated to solving real workplace problems; 20% of the training time uses apprenticeship, coaching, mentoring, tutoring and networking in the workplace; and only 10% of the time is used for engaging a student in classroom-based mini-projects, mind-sessions, feedback and discussion meetings, workshops and training sessions. The customised programmes are 75% subsidised by the companies.

We explored the websites of the 12 shortlisted corporate US-affiliated or based universities and analysed their mission statements or the strategic/corporate plans. The content analysis indicates that the five most frequently used words were: continuous, innovation, research, knowledge, and develop (see Fig. 4).



Figure 4: The frequently used words in the mission statements of the shortlisted corporate universities

The results of the correlations of the five most frequently used terms analysis are presented in Table 3.

Table 3. The results of correlations of terms analysis

Term 1		Term 2	r	p-value
continuous	← →	learning/strategic/innovation	0.925	0
innovation	← →	research/products/implementation	0.915	0.2856366
research	← →	strategic/university/innovation/	0.857	0.3522287
knowledge	← →	learning/research	0.835	0.4371445
develop	← →	knowledge/strategic learning	0.725	0.4576197

Note: p<.05

The data yielded from the analysis suggested that *the mission of the corporate university* strongly relies on continuous learning and implementation of innovations that are associated with conducting research and implementation of new products. The student-conducted research is considered to be a strategic prerequisite for the university as it promotes and develops knowledge.

Research universities emerged in the 1970s and have been a relatively recent innovative university concept. US research universities are of world-class status and compete successfully in the knowledge market worldwide. Research universities fall into two categories: RU/VH (Research Universities/very high research activity) and RU/H (Research Universities/high research activity). They are indispensable in developing the national economy as well as local and regional economies through performing the research in all disciplines. Their success is due to support by private industry and federal support which means that universities and industry cooperate in the research and this cooperation returns benefits to both parties. From the perspective of private industry, this cooperation helps companies talented graduate students who might be hired by them after the students completed their Masters's and Ph.D. degrees (Atkinson & Blanpied, 2008). The curricula in those universities are now less 'academic' but more 'practical' The research universities employ the "60–30–10" teaching/training and research-related learning model. The students are supposed to spend 60% of their training time on the labs and projects, 30% of the time is spent on lectures and seminars and 10% of the time is spent on the self-paced study (LeMahieu & Palka, 2020).

Twelve public research universities were shortlisted for the content analyses of the mission statements to explore how the research missions are presented in them. The content analysis of the text corpus of the mission statements showed that the five most frequently used words were: research, university, student, life, and state (see Fig. 5).



Figure 5: The frequency of words used in the mission statements of the shortlisted research universities

The results of the correlations of the five most frequently used terms analysis are presented in Table 4.

Table 4. The results of correlations of terms analysis

Term 1	Term 2	r	p-value
research	← → teaching/public	0.952	0.0117991
university	← → advancing/service/forward	0.921	0.0101307
student	← → support/success	0.844	0.1833012
life	← → work/nation/responsibility	0.830	0.0118640
state	← → responsibility	0.778	0.0006649

Note: p<.05

As can be seen, the term ‘research’ best correlates with the terms ‘teaching’ and ‘public’. The term ‘university’ correlates well with the terms ‘advancing’, ‘service’, and ‘forward’. The terms ‘student’ correlates with ‘support’ and success. ‘Life’ correlates with ‘work’, ‘nation’, and ‘responsibility’. ‘State’ also correlates with responsibility. The results of the correlation of the terms might be interpreted as that the research universities associate their missions with research-based and -driven teaching. Their purpose is to advance service through the support of the students who are supposed to be responsible for the welfare of the nation and the state.

The ultimate digital learning university is currently a promising concept that provides the students with up-to-date educational experience and aims to build a digital way of students’ thinking (Johnston, MacNeill & Smyth, 2018). The curriculum at that university is similar to the one which can be observed at brick-and-mortar university. It is mostly delivered to provide the same educational opportunities using the same resources and activities. The only difference is that the curriculum is digitally distributed and reduced to largely practical issues of choice of methods, media, and management. The organisation of learning and teaching is performed within modularised programmes based on video-content, tutorials, and labs. The programmes are flexible, often student-tailored, and use a cohort or community-based approach to facilitation or moderation of the course delivery. The distribution of learning time might look like the “80–10–10” learning model in which 80% of the time could be spent on self-study, 10% of the time could be dedicated to watching the video content and doing video-based assignments, and 10% of the time could be used by students to participate in online live sessions (Johnston, MacNeill & Smyth, 2018).

Several digital universities and universities providing degrees fully online were chosen for the content analyses of their mission statements. The content analysis of the text corpus of the corpus of mission statements showed that the five most frequently used words were: courses, development, economy, learning, and professional (see Fig. 6).



Figure 6: The frequency of words used in the mission statements of the selected digital universities

The results of the correlations of the five most frequently used terms analysis are presented in Table 5.

Table 5: The results of correlations of terms analysis

Term 1		Term 2	<i>r</i>	p-value
courses	← →	professional/economy	0.925	0.10144911
development	← →	learning	0.875	0.13360721
economy	← →	development	0.815	0.15879112
learning	← →	development/professional	0.775	0.14872914
professional	← →	economy/courses	0.771	0.21978643

Note: $p < .05$

The results of the correlation of the terms can lead to the conclusion that digital universities link their mission to professional development. These institutions train the staff mainly for the economy and business spheres through the specific purpose courses.

The consolidated analyses of the mission statements of all types of the universities in the USA indicates that the five most frequently used words were: research, students, university, world, and knowledge (see Fig. 7).



Figure 7: The consolidated analyses of the frequency of words used in the mission statements of all types of American universities

The consolidated content analyses of the mission statements proved that the research mission dominates in the educational policies and strategies of the American universities. While the research mission seems to be the priority for the large universities, education is the priority for the small ones. The frequencies of the words such as knowledge, education collocating with society/community, teaching, and students go in line with findings of both Firmin and Gilson (2010) (about society) and Hladchenko (2013) (about research and teaching). Our findings proved the sameness in universities' missions relying on research and education (Kosmützky & Krücken, 2015).

Though the autonomy is declared, the education system in Ukraine is strictly regulated by the authorities by implementing a top-down approach to education policy shaping and legislation adoption. For the above reason, both classical and research Ukrainian universities rely on the teacher-centric paradigm which is similar to American classical tertiary institutions. They also employ the “60–30–10” teaching and learning model.

To identify how the research mission is represented in the mission statements of both types of universities, the websites of 5 classical and 5 research universities were explored and their mission statements were analysed using the same method.

The content analysis indicates that the five most frequently used words in the mission statement corpus of classical universities were: society, educational, research, scientific, world (see Fig. 8).



Figure 8: The consolidated analyses of the frequency of words used in the mission statements of classical Ukrainian universities

The results of the correlations of the five most frequently used terms analysis are presented in Table 6.

Table 6: The results of correlations of terms analysis

Term 1		Term 2	<i>r</i>	p-value
society	← →	research	0.928	0.0101307
educational	← →	research	0.885	0.1201807
research	← →	society	0.868	0.1525022
scientific	← →	society	0.837	0.4534672
world	← →	values	0.828	0.5447373

Note: $p < .05$

The results of the analyses of the correlation of the terms imply that the mission of the classical Ukrainian university is supposed to be focused on the society's needs in terms of research and should comply with the values of the world. The content analysis of the mission statement corpus of the research universities in Ukraine showed that the five most frequently used words were: scientific, educational, research, academic, cultural (see Fig. 9).



Figure 9: The consolidated analyses of the frequency of words used in the mission statements of research Ukrainian universities

The results of the correlations of the five most frequently used terms analysis are presented in Table 7.

Table 7: The results of correlations of terms analysis

Term 1		Term 2	<i>r</i>	p-value
scientific	← →	research	0.811	0.0135827
educational	← →	research	0.801	0.2010091
research	← →	scientific	0.763	0.1233711
academic	← →	educational	0.733	0.5227513
cultural	← →	educational	0.703	0.4917649

Note: $p < .05$

The results of the analyses of the correlation of the most frequently used terms suggest that the research for academic and educational purposes is a leading activity of these institutions regardless of the cultural component is mentioned.

The present endeavour contributed to the previous research in the student-conducted research in different types of universities in America and Ukraine and its share in the university mission. The novelty of the study lies in the specification of the student-conducted research in the different types of higher education institutions' missions of America with the projection to the context of Ukraine.

It goes in line with Schulte (2004) who stated that the goal of engaging the students in the research activity is not only for them to get the grade or publish the paper but to generate innovations for the community or to launch a start-up to become a job creator. It agrees with the findings of Schmitz (2017) who proved that all university activities, including research, are driven by commercialisation. It is consistent with Sitnicki (2020) claiming that the student-conducted research should be subsidised by the government or through the direct investments of businesses as it is done in America. This claim can be a rationale for further proposals to shape legislation and research management in universities

in Ukraine. The study findings imply that the university research management would be more efficient if its performance could be measured, which aligns with Lewis, Hendel, and Kallsen (2007).

Conclusions

The research occupies the leading position in the missions of corporate universities, public research universities in America, and classical and research universities in Ukraine. The university missions are formulated regarding the social demand, and political and economic trends in the country and the world. The missions of the American universities are more diverse than the missions of the Ukrainian universities which suggests that the American universities have more freedoms than the Ukrainian ones. The post-industrial stage of education is at its peak of development in America while in Ukraine it is emerging. The research in Ukraine is conducted by separate research institutions. It supposes that the university (student-conducted) research does not get enough attention and support. The American higher education model has become a standard model in Ukraine. Further research is needed to address the legislation loopholes of supporting the research at the universities.

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