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**ADAPTION OF WIRELESS INTERNET TECHNOLOGY
BY YOUTH MARKET GROUP**

The purpose of this paper is to determine Internet technology adaption and the use of wireless Internet devices among youth, especially students at higher education institution in Tshwane. The sampling process was applied to select 360 students from higher education institutions, and a self-administrative questionnaire was used to gather the information from the selected respondents. The findings suggest there is no significant difference among students who attended public institutions and students who attended private institutions on adapting Internet technology and use of wireless devices. The students perceived that wireless Internet devices give users a certain positive image, and make social life easy. But they are unsure whether wireless Internet devices indicate the user's social status, bring self-respect and make users feel good. This paper provides information to develop marketing plans and strategies to sell wireless Internet products and services to the youth market. In addition, it helps to predict the future of innovative Internet technology and show where the wireless devices market is heading.

Keywords: higher education, youth market, technology adaption, wireless devices, Internet.

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**ВПРОВАДЖЕННЯ БЕЗПРОВІДНИХ ІНТЕРНЕТ-ТЕХНОЛОГІЙ
НА МОЛОДІЖНОМУ РИНКУ**

У статті визначено рівень впровадження Інтернет-технологій і використання безпроводних Інтернет-пристроїв на молодіжному ринку на прикладі студентів вищих навчальних закладів в міському окрузі Цване, ПАР. Методом відбору вибрано 360 студентів із вищих навчальних закладів, для збору інформації було використано анкету. Отримані дані свідчать, що немає жодних істотних відмінностей у поглядах серед студентів, які вчаться в державних установах, і студентів з приватних установ щодо прийняття Інтернет-технологій і використання безпроводних пристроїв. Студенти вважають, що безпроводні Інтернет-пристрої надають користувачеві певний позитивний імідж і спрощують соціальне життя. Але єдиної думки про те, чи безпроводні Інтернет-пристрої демонструють певний соціальний статус користувача, підвищують самоповагу і змушують користувача відчувати себе добре, не склалося. Зібрано інформацію для розробки маркетингових планів і стратегій продажу безпроводних Інтернет-пристроїв і послуг на молодіжному ринку. Передбачено майбутнє інноваційних Інтернет-технологій і показано напрям розвитку ринку безпроводних пристроїв.

Ключові слова: вища освіта, молодіжний ринок, прийняття технологій, безпроводні пристрої, Інтернет.

Таб. 3. Рис. 1. Літ. 17.

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В статье определен уровень внедрения Интернет-технологий и использования беспроводных Интернет-устройств на молодежном рынке на примере студентов высших учебных заведений в городском округе Цване, ЮАР. Методом отбора выбраны

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360 студентов из высших учебных заведений, для сбора информации была использована анкета. Полученные данные свидетельствуют, что нет никаких существенных различий во взглядах среди студентов, которые учатся в государственных учреждениях, и студентов из частных учреждений относительно принятия Интернет-технологий и использования беспроводных Интернет-устройств. Студенты считают, что беспроводные Интернет-устройства предоставляют пользователю определенный позитивный имидж и упрощают социальную жизнь. Но единого мнения о том, что беспроводные Интернет-устройства демонстрируют определенный социальный статус пользователя, повышают самоуважение и заставляют пользователя чувствовать себя хорошо, не сложилось. Собрана информация для разработки маркетинговых планов и стратегий по продаже беспроводных Интернет-устройств и услуг на молодежном рынке. Предсказано будущее инновационных Интернет-технологий и показано направление развития рынка беспроводных устройств.

Ключевые слова: высшее образование, молодежный рынок, принятие технологии, беспроводные устройства, Интернет.

Introduction. According to Kyobe (2011:255-267), the adoption and diffusion of information and communication technologies (ICT's) contributes to development. Therefore, it is not surprising to see a number of wireless devices nowadays used for communicating. While considerable research into various technology acceptances has been conducted, few studies have examined Internet technology adaption and the use of wireless Internet and its devices by youth. Roschelle (2003:260-272) is of the opinion that every new generation of learning technology brings with it a new deep conceptual issue. The youth of today, especially higher education students, are accepting and using technology more than ever. Kay and Lauricella (2011) are of the view that the majority of today's students have been nurtured on a steady diet of technology. This is visible through their increasing consumption of the latest digital tools such as digital cameras, smartphones, podcast players, personal data assistants (PDAs), laptops, iPods and iPads. It is probably arguable that most higher education students have grown up immersed in technology in some form in their homes or schooling environment, hence making them to have greater technology-acceptance flexibility as well as the drive to increase personal resources to enable them to own the latest digital tools. It can also be assumed that higher education students are presently comfortable using wireless devices to organize their academic work, personal lives, as well as their future activities once they graduate into workforce.

There has been an increase in the numbers of higher education students using and adapting to technology for both study and social purposes. However, regardless such trends, there is a lack in academic research on the use of technologies, with reference to wireless Internet, among youth and higher education students in particular. Kim, Mims and Holmes (2006: 77-100) stated that for the past few years, students in higher education have enjoyed many benefits of wired technology. However, wired technology provides limited access due to the lack of mobility. Students have realized that wired-technologies cannot provide them with anytime, anywhere functionality, and hence decide to opt for wireless technologies. These include cellular phones, laptop computers, data cards and wireless Internet modems. According to Dubendorf (2003), as cited by Kim et al., wireless means that transmission of any form of data-text, voice, video or image conducted through radio waves, infrared waves or

microwaves rather than using wires. Therefore, with wireless devices, students can carry their wireless laptops, cellular phones and iPads anytime, anywhere and can access Internet in public places, such as libraries, cafeterias, bus stops etc.

Statistically South Africa's population is very youthful according to Statistics South Africa: Mid-Year Population estimates, 2001, as cited by SouthAfrica.info (2006). Most of young people are found in the higher education student group, because their ages range between 16 and 30. Out of the population of 44 mln in 2001, about 45% of South Africa's population, or 19 mln, were under the age of 19; while 14 mln were between 5 and 18. The UCT Unilever Institute of Strategic Marketing as cited by Koutras (2006:9) argues that South African youngsters aged 7 to 17 years are economically influential and spend more than \$ 500 mln a year, whilst their parents spend an additional \$ 2,5 billion on them. It has also been found that young South Africans are far more self-confident than their parents as they have grown up in a free and fair society, a society that was previously subject to vigorous obstacles. These statistics demonstrate that youth possess adequate resources to get and adopt new technologies. This is reflected heavily in their buying behaviour, because they have pocket money amounting to nearly R 5 bln a year. Cranston and Davies (2011:35) pointed out that 32% of the people who use Internet were younger than 24 years old. This illustrates that a good number of youth is technology-wise and chances are the disposable income they have, they spend on technology.

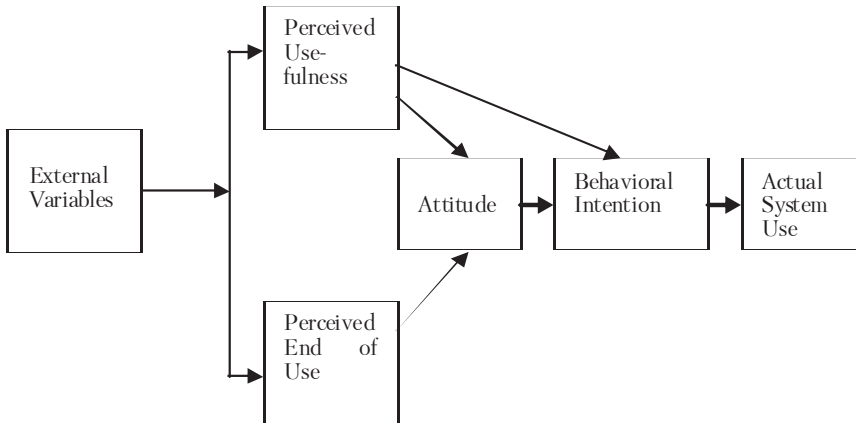
Literature review.

Kyobe (2011:255-267) stated that many factors influencing technology adaptation have been identified. Corrales and Westhoff (2006:911-933) pointed out that in studying technology acceptance scholars typically attribute to 2 main schools of thought. These are the "diffusion of innovations" and the "social shaping". The "diffusion of innovations" school focuses on specific characteristic of a technology — its functionality, ease of acceptance, and the mechanisms through which new ideas spread. The "social shaping" school, alternatively, focuses on the characteristics of the acceptance unit. Erumban and de Jong (2006:302-314) emphasize that the rate at which new technologies are accepted is considered to be the major factor in driving the pace of economic growth through technological product innovation. D'Souza and Allaway (2011:343-355) state that an innovation is an idea, practice or object perceived to be new by an individual. Youth is interested in innovative products. However, in order for higher education institution students to make a wireless Internet product acceptance decision, they have to evaluate information on a product's characteristics.

Seneler, Basoglu and Daim (2010:417-438) stated that new opportunities of innovation and research industrialization of knowledge of service have increased dramatically. According to Kyobe, (2011:255-267), for innovation to be used well, users must be educated and possess relevant skills. Higher education institution students' knowledge of modern communication devices and the ability they have to use them enable them to fully enjoy the benefits provided by these products. Some of these benefits include easiness of accessing them anywhere and anytime, flexibility, professionalism and creativity to explore other possibilities. Seligman (2006:108-120) pointed out that a technology user may consider himself intelligent and professional because he has accepted technology relatively early. In this case, youth accepts technology

early as stated previously — that it is probably they have grown up immersed in technology. Reino, Frew and Albacete-Sa'ez (2011:66-80) added that information communication technology (ICT) shortened distribution channels, hence making the acceptance of technology easier by making it available and accessible.

IT researchers use theories and models to envisage and describe behaviours in different areas. Zhou (2011:636-652) pointed out that the technology acceptance model (TAM) and trust theory are often used to explain user's acceptance of technology. Some other models and theories that exist include the technology acceptance model 2 (TAM2), the theory of planned behaviour (TPB), the combined TAM and TPB (C-TAM-TPB), the unified theory of acceptance and use of technology (UTAUT), the theory of reasoned action (TRA) and the innovation and diffusion theory (IDT). Of the above mentioned theories, the technology acceptance theory (TAM) as shown in Figure 1, and the Innovations and Diffusion Theory are mostly applicable in the adaption of technology and use of wireless devices by higher education institution students.



Source: Adapted from Lu et al. 2003:206-222

Figure 1. Technology Acceptance Model.

According to Haggman (2009:386-407), diffusion models have helped many producers of consumer goods enhance the success of their new products at markets. Understanding how higher education institution students perceive attributes of innovations and how social mechanism can be leveraged to enhance acceptance will provide variable support for companies commercializing their innovations.

According to Seligman (2006:108-120), TAM in its essence suggests that perception of usefulness and ease-of-use can be used to predict behavior. Liao, Tao, Liu, Kuo and Chuang (2011:237-254) proposed that perceived ease of use and perceived usefulness are the 2 key factors influencing the intended use of information system. According to Trott (2008:59), the innovation and diffusion theory includes the factors of influences of psychological or personal features, technology perceptions, communication behaviour and socio-demographic attributes on the diffusion or adaptation processes. Rogers (2003:168) stated that an individual's decision concerning innovation is not an instantaneous act; it rather occurs over time and consists of a series of

different actions. From the above discussion, it can be reasoned that higher education institution students first evaluate and then decide whether or not to incorporate the innovation of wireless devices into ongoing practices. In addition, students' perceptions of usefulness and ease of use will influence their intentions to purchase devices. This is because they would already have built a positive image of the products, as they have a good knowledge of how they operate.

Research design and methodology. Seemingly, there has been an oversight in the current market segmentation. Organizations and companies involved in the wireless device industry do not view higher education institution students as a separate segment. Thus, they do not cater specifically for this group's needs. These students represent a potential niche market for the wireless device industry. However, details on their technology adaption and usage of wireless Internet are somewhat deficient. Therefore, it is essential that places where students use wireless Internet, factors influencing their purchase decision and their perception of the quality of wireless Internet devices be researched. The primary objective of this research paper is to determine Internet technology adaption and the use of wireless Internet devices among youth, by means of following a planned research design and methodology.

As mentioned previously, the population of interest in this study consists of registered students from selected higher education institutions (HEI) in the Tshwane metropolitan area, Gauteng, South Africa. A stratified sampling method was used to draw the sample. First, faculties of the selected higher education institutions were listed. After that, some departments were selected from the institutions' faculties and a simple random sample of students was drawn from each of the selected departments. A self-administered questionnaire was the research instrument used to collect data from the respondents. The total of 440 questionnaires were distributed to the institutions, 220 were handed out to public higher education institution students and 220 were handed out to private higher education institution students. From the 220 questionnaires handed out to public higher education institution students, 212 (the response rate of 96.4%) were received back, of which 6 were rejected due to errors. After the editing, the final sample size of 206 public higher education institution students was obtained. The same process was followed for the private higher education institution students. From 167 completed questionnaires received back (the response rate of 75.9%), only 154 could be used. 13 of these questionnaires had not been completed in full, and were rejected.

After editing the useable questionnaires, the data was captured on the Excel spreadsheet from where it was analyzed with the statistical computer software package PSAW version 18. A Cronbach's alpha coefficient was determined to measure the reliability of the student's adaptation of technology and usage of wireless Internet. According to McMillan and Schumacker (2001:247), the Cronbach's alpha coefficient assumes equivalence of all items, is used for the items that are not scored right or wrong, and is generally considered to be the most appropriate type of reliability for survey research in which there is a range of possible answers for each question. A high Cronbach's alpha coefficient would be indicative of high internal consistency in which a set of items measuring a particular characteristic was answered.

A Cronbach's alpha coefficient of 0.925 was obtained indicating high level of internal consistency of the 60-item scale aimed at measuring student's Internet technology adaption with reference to wireless Internet.

Findings. From 206 students attending public higher education institutions, 73 (35.4%) were males and 133 (64.6%) were females. From 154 students attending private higher education institutions, 55 (35.7%) were males and 99 (64.3%) were females. The majority of the students, 99 (48.1%) at public higher education institution and 102 (66.2%) at private higher education institutions were in the age group 19-21.

Table 1. Places where students use wireless Internet devices

Place	Public HEI		Private HEI	
	#	% of total	#	% of total
Home	32	15.5	31	20.1
Campus	115	55.8	44	28.6
Cafe	91	44.2	108	70.1
Anywhere there is a signal	139	67.5	98	63.6
Anywhere there is network	62	30.1	58	37.7

* Public and private HEI students use wireless devices at more than one place (n = 360).

Table I shows places where students use wireless Internet devices. 32 (15.5%) of the public higher education institution students use wireless Internet devices at home. 115 (55.8%) use wireless Internet devices at campus and 91 (44.2%) of the public higher education institution students use it in cafes. Furthermore, 139 (67.5%) students use wireless Internet devices where ever there is a signal and 62 (30.1%) of the students use wireless Internet devices anywhere a network is available.

Wireless Internet devices like cellular phones are installed with Internet accessing functions and this could be the reason they are favoured by public higher education institution students to use them for Internet access whenever there is a signal. 31 (20.1%) private higher education institution students use wireless Internet devices at home. 44 (28.6%) use them at campus and 108 (70.1%) cafes. Furthermore, 89 (63.6%) students use wireless Internet devices anywhere there is a signal and 58 (37.7%) of the students use wireless Internet devices anywhere a network is available. Most cafes are labeled as "hot-spots" and this could be the reason they are more favoured by private higher education institution students.

Table II shows the factors influencing students' purchase decision. In Table II, 57 (27.7%) of public higher education institution students indicate that price of service connection influenced their purchase decision. Features and functions of a product is another factor with 100 (48.5%) of them indicating purchasing the product because of this influence. The product is also purchased by public higher education institution students because of its price, with 52 (25.2%) of them purchasing the product. 27 (13.1%) of the students indicated that family and friends' opinions influenced their purchasing decision, whereas 13 (6.3%) and 28 (13.6%) were influenced by salespeople's advice and easy availability of a product respectively. Promotions is also a motive, with 28 (13.6%) of them indicating this factor. 23 (11.2%) of public higher education institution students also indicate they are influenced by warranties that accompany the product when making purchase decision.

Table 2. Factors influencing students' purchase decision

Factors	Public HEI		Private HEI	
	#	% of total	#	% of total
Price of service connection	57	27.7	47	30.5
Features and functions of the product	100	48.5	60	39.0
Price of the product	52	25.2	43	27.9
Family and friends' opinions	27	13.1	24	15.6
Salesperson's advice	13	6.3	15	9.7
Easy availability of the product	39	18.9	30	19.5
Promotion of the product	28	13.6	29	18.8
Warranties accompanying the product	23	11.2	14	9.1
Other (Please specify)	2	1.0	2	1.3

On the other hand, 47 (30.5%) of private higher education institution students indicate they are influenced by price of service connection. Features and functions of the product is another factor with 60 (39.0%) of them indicating purchasing the product through this influence. The product is also purchased by public higher education institution students because of its price, with 43 (27.9%) of them purchasing the product. 24 (15.6%) of the students indicated that family and friends' opinions influenced their purchasing decision, whereas, 15 (9.7%) and 30 (19.5%) were influenced by salespeople's advice and easy availability of the product respectively. Promotion of the product is also a motive, with 29 (18.8%) of them indicating this factor. 14 (9.1%) of public higher education institution students also indicate they are influenced by warranties that accompany the product when making purchase decision.

Table II shows that features and functions influencing both types of students in buying wireless devices. Price of service connection also influences the students to buy devices. This could probably be because students find the price affordable and that they have disposable income that allows them purchasing.

According to Zikmund and Babin (2007:63), hypotheses must be testable. McDaniel and Gates (2007:70) agree and add that a good hypothesis will contain clear implications for testing stated relationships. There are 2 basic forms of hypotheses, namely the null hypothesis (H_0) and the alternative hypothesis (H_a). Kolb (2008:257) explains that one hypothesis is the opposite of the other - so both cannot be true.

From Table III, it is evident that 5 variables [V42 ($p= 0.178$), V43 ($p= 0.593$), V44 ($p= 0.322$), V45 ($p= 0.909$) and V46 ($p= 0.133$)] indicate there exist no significant differences between students studying at public higher education institutions and students studying at private higher education institutions regarding the way they perceive the quality of wireless Internet devices.

Inference for levels of agreement and disagreement.

Both public higher education institution students and private higher education institution students neither agree, nor disagree with the variables V42, that wireless Internet devices have a high standard quality and V43 that wireless Internet devices give excellent Internet reception. Both public higher education institution students and private higher education institution students agree with V44 that wireless Internet devices can provide for their current Internet needs and V45 that wireless Internet devices have a fast connecting speed — also with V46 that wireless Internet devices are user-friendly.

Table 3. Levels of agreement or disagreement between public higher education institution students and private higher education institution students on the perception of the quality of wireless Internet devices

Description of dependant variable	Public HEI Students	Private HEI Students	Total Sample Variable (1=Public+2=Private)
	T-test mean Statistics (Standard deviation)	T-test mean statistics (Standard deviation)	
V42 - Wireless Internet device products have a high standard quality.	3.88 (.817)	3.73 (1.027)	MD = .149 t = 1.351 Sig = .178 p-value >0.05 Accepted Mean (1+2) = 3.81 Neither agree nor disagree to agree
V43 - Wireless Internet device products give excellent Internet reception.	3.66 (.821)	3.61 (.938)	MD = .56 t = .535 Sig = .593 p-value =>0.05 Accepted Mean (1+2) = 3.64 Neither agree nor disagree to agree
V44 - Wireless Internet devices can provide for my current needs.	3.96 (.821)	3.86 (.938)	MD = .104 t = .992 Sig = .322 p-value >0.05 Accepted Mean (1+2) = 3.91 Agree
V45 - Wireless Internet devices have a fast connecting speed.	3.77 (.924)	3.78 (.997)	MD = -.013 t = -.114 Sig = .909 p-value >0.05 Accepted Mean (1+2) = 3.78 Agree
V46 - Wireless Internet devices are user-friendly.	3.95 (.789)	3.80 (.875)	MD = .150 t = 1.507 Sig = .133 p-value >0.05 Accepted Mean (1+2) = 3.88 Agree
Abbreviations: V – Variable df – Degree of freedom confidence level			
MD – Mean difference Sig – Significant 2-tailed test t – T-test x – 95%			

Recommendations. The demographic profiles of higher education students will assist the wireless device industry to develop marketing plans and strategies for this market group. A large number of public higher education institution students and private higher education institution students use wireless devices; the wireless device industry should come up with special packages in order to capitalize this. The wire-

less device industry should also come up with products and services that focus exclusively on fun and entertainment for the youth market group. The majority of public and private higher education institution students use smartphones. Wireless device industry should continuously invest in the innovation of their technology in order to improve the systems that support Internet in mobile phones so as to keep students satisfied and loyal to the products they are currently using. Most public and private higher education institution students purchased their wireless device products. Wireless device retailers should embark on joint marketing activity with outlets to promote special prices to students who present valid student cards when making a purchase. As students perceive wireless device products to be reliable and having a high quality, manufacturers of these products should ensure that students stick to this perception.

Conclusion. Higher education institution students accept technology and use different wireless Internet devices to organize their social life, keep their records, access Internet and also for entertainment purposes. The main reasons given for using wireless Internet devices is flexibility and entertainment. The majority of students indicate the ways in which they acquire wireless Internet devices do not influence their preferences. Therefore, there are no significant differences between public and private higher education institution student's preferences regarding wireless Internet devices they use. Both public and private higher education students are unsure if wireless Internet devices are satisfactory and economical to use.

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