Original Article

Wearable devices: new quality in sports and finance

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Abstract

Wearables are a new type of mobile devices, that, due to their versatile applications, are gaining popularity among consumers around the world. This is the first study that jointly examines the usage of the sport and financial functionalities of wearables devices. Firstly the authors explored the drivers of consumer interest in wearable devices, and secondly identified the determinants of their payment use. Based on a nationwide representative survey of Internet users in Poland, two empirical models were estimated with the use of logit model regressions. It emerged that sport and health monitoring functionalities are the main drivers for the use of wearables. Moreover, the study unveiled that NFC payment functionality can effectively encourage consumers to purchase their wearable device. Communication in social networks and attractive loyalty applications are also factors furthering the adoption of this new solution. In their work, the authors proposed several guidelines for wearable manufacturers that could foster the development of this innovative market segment. First of all, the consumers using loyalty apps, which are more likely to be interested in wearables are open to establishing relationships with their product providers. It means that special loyalty programs could be offered to them. Furthermore, social networks will likely prove excellent channels to promote wearables; in particular, by allowing communication together with the promotion of a sporty, active lifestyle. Lastly, payment functionalities have been underestimated by wearables manufacturers so far. Marketing communication should underline the usefulness of the payment functions, in the context of quick, convenient and effortless purchases while doing sports, e.g. during running or cycling.

Key Words: wearables, wearable payments, sports applications, mobile services

Introduction

Information and communication technologies (ICT) have entered all areas of human activities. In many cases, the same solutions can be applied in such distant spheres as finance and sport. In the first two decades of the twenty-first century, the biggest change seems to be connected to the widespread usage of mobile devices and the developments of mobile technologies. Mobile devices have evolved from feature-phones to touch screen smartphones with Internet access and many online application platforms that can be installed easily. In recent years, the trend is to expand the functionalities of the smartphone with the use of additional wearing-enabled devices, also known as wearables. These devices can be perceived as a fashion accessory, called ‘fashnology’ – fashion and technology (Chuah et al., 2016).

It seems, however, that the practical applications of wearables are dominant. The devices are popular primarily among users who practise sports and want to monitor their progress, body parameters or their life-balance (Kim & Shin, 2015; Rodgers, Alon, Pai, & Conroy, 2019). On the other hand, in the financial sector, where mobile payments are dynamically developing as part of the FinTech revolution (Polasik & Piotrowski, 2016), the main functionality of wearables is contactless payments at the physical stores with EFT-POS terminals.

Despite the growing number of users and the number of applications, until now, the usage of wearable devices has not been the subject of scientific research in Poland. Moreover, even though several studies have already been conducted in selected countries, to the best of the authors knowledge, this is the first study that examines the sport-health and financial-payment usage of wearables devices jointly. With the study, the authors aim to:

1. Determine the popularity and types of applications of wearable devices on the Polish market.
2. Explain the drivers of consumer interest in the purchase and use of wearable devices.
3. Identify the empirical factors underlying the users’ decision to perform wearable contactless payments.

The study used empirical data from a nationwide representative survey of Internet users in Poland, conducted in December 2018. In the first part of the article, the authors define wearables, conduct a review of the literature, and describe the market situation. Afterwards, the methodology and empirical data were presented,

together with descriptive statistics. The final parts of the work are devoted to the analysis of obtained empirical results, as well as a discussion and presentation of conclusions.

Wearables devices and their applications

Wearables definition

Wearable devices, also known as wearable technology, may be defined as advanced computing technologies that the user can wear (Jacobs et. al, 2019), such as smartwatches, smart bands, smart glasses, smart jewellery or any other type of smart clothing equipped with sensors that track and record the users' data (Wang, 2015; Ching & Singh, 2016). The first devices of this type were created in the 1960s when Thorp and Shannon created a wearable device for entering and predicting roulette results using an earbud (Thorp, 1998). In the years 2006-2013, several wearables appeared on the market, but the real breakthrough on the market took place in 2014, when the first Apple Watch was introduced. Later, several industry services hailed the year 2014 as "The Year of Wearable Technology" (www1). As of 2020, the most popular wearable devices across the global market are earwear, smartwatches and smartbands (www2). Tarabasz & Poddar (2019) pointed out that in the present time, wearable devices combine four significant technological trends such as a mobile channel of communication, the Internet of Things (IoT), Augmented Reality (AR), and Big Data. They are, in fact, tiny computers with numerous functions besides showing time (Chuah et. al, 2016).

Based on the research of Ching & Singh (2016), the main characteristics of wearables lie in that they are: unrestrictive (hands-free, enabling the users can do various things at the time); controllable (the user may control it at any time); attentive (devices with multiple sensors and working modes); observable (providing alerts, reminders or messages which might keep the user's attention); communicative (able to exchange information through a wireless network) and unmonopolizing (the user might be focused on his actions as usage does not require his attention). These are clear boons for many. As indicated above, one of the main advantages of the wearable devices is that they are discrete, and allow the users to perform tasks in a discreet manner (Page, 2018).

However, apart from all the positives, the devices have several disadvantages. As several researchers have indicated, wearable devices might be vulnerable to cyber threats and privacy issues – this has already been analysed in several studies (H. S. Chang, Lee, & Ji, 2016; Moon, Baker, & Goughnour, 2019). Moon, et. al. (2019) pointed out several security challenges such as "data losses, infection by malware, unauthorised access to personal data". The product market analysis of Seneviratne et al., (2017) showed that many devices use Bluetooth Low Energy technology. At the same time, the review made by the researchers indicated that devices using it as a main channel of communication may be affected by eavesdropping, traffic analysis, or the collection of device data, i.e. the PIN code to unlock the phone. Thus, the current types of devices are not yet perfect, but they might be still help improve quality of life and daily activities.

Sport and health applications of wearable devices

Wearable devices are used in various fields – one of which is sports activities and health monitoring. The collected users' data (e. g. heart rate) used in conjunction with other variables such as time and additional information – height or weight of the user might provide reference data for both athletic training and health management (Wang, 2015). Besides the sport analysis functions, (Arogan, Manivannan, & Harrison, 2019), wearable devices might be used for monitoring both the physical (Guk et. al., 2019) and mental health (Ollander, Godin, Campagne, & Charbonnier, 2017) of users.

Health monitoring through wearables has a significant impact on the well-being of the users, continually supporting information on their health outcomes. This in turn allows for the improvement of the quality of information and awareness of the users with respect to their health. More information about health parameters is conducive to healthier behaviour, which might reduce health care costs (Cheung et al., 2019). Reeder & David (2016) conducted a systematic literature review on this topic. Besides the typical functionalities offered by the retail smartwatches, a usefulness came to light concerning e.g. the self-management of diabetes, the detection of the users' emotional state or behaviours such as their posture, eating, scratching, or taking medication. Selected functionalities of wearables might be particularly useful for people with disabilities – due to their unobtrusive nature, information can flow without hindering the everyday life of the disabled people (Moon et al., 2019).

Wearable payments and the role of NFC technology

Besides the above-mentioned functionalities, wearable devices can be used as a hub for accessing a very different lifestyle and business services such as e-mails or messaging (Chuah et al., 2016). One of the most common and useful functionalities, continuously gaining popularity among consumers is the ability to conduct financial transactions in Points-of-Sale (Bezhovski, 2016). To do this, mobile devices such as wearables use NFC technology, which is an extension of RFID used in proximity payment cards. NFC is a wireless communication technology enabling data transfer at an approximate distance of 10 cm (Leong, Hew, Tan, & Ooi, 2013). It is an extension of a wireless ISO/IEC 14443 standard used in contactless payment cards. The NFC standard was created to unify existing standards of proximity communication, as well as to enable the intuitive, secure, and simple exchange of data between users of NFC devices.

A major breakout occurred around 2013, when the Host Card Emulation, revolutionary contactless NFC-based payment technology created by SimplyTapp, was primarily implemented in the newest version of Google's smartphone operating system. Since then, the smartphone equipped with an NFC module, using a mobile application associated with a payment card, can be used for transactions without a physical secure element needed. This solution works based on the so-called cloud in which consumer data is stored. The payment environment is managed by Trusted Service Managers and is characterised by a high level of security (Pourghomi & Abi-char, 2015). As of 2020, on the global payment services market, there are several options available for wearables. The most popular payment systems that offer to conduct wearable contactless payments are Apple Pay (Apple Watches), Google Pay (WearOS devices) Fitbit Pay (Fitbit smartwatches and smartbands), Garmin Pay (Garmin smartwatches) and Samsung Pay (TizenOS Smartwatches) (www3).

The market of wearables devices

Several researchers have already indicated that there is an upcoming massive growth of IoT including wearable devices in the next few years (Tarabasz & Poddar, 2019; Moon et al., 2019). The number of users of connected wearables increases gradually from year to year. As of 2019, there are over 350 million of wearables users worldwide (Figure 1). According to the forecast presented in the above chart, that number might grow to about 365 million in 2022.

Figure 1. *Wearable device users worldwide (2017-2029) and the forecast for the years 2020-2022 (millions)*

Source: Statista Global Consumer Survey 2019.

Despite the fact that smartwatches and smartbands vary in size, weight, functionalities, and price, the market share for smartwatches and smartbands shipments is similar. According to the report of IDC, as of the end of 2019, about 22.7% of shipped devices are smartwatches, while 22.4% of devices are smartbands. The rest includes earwear and other connected devices, which are not in the scope of the study (www3). According to Mastercard's data (www4), wearable payments are rapidly gaining popularity among retail customers – over eight times in 2019. The leaders of wearables devices payment in Europe are respectively the Netherlands (1/3 of wearables transactions), the United Kingdom, Switzerland, Russia, Poland, Sweden, Czech Republic, Finland, Germany and Ukraine. The above-mentioned data indicates continuous market growth in the usage of wearables, which underlines the importance of undertaking of scientific study in this field.

Previous studies concerning wearable devices

Wearables have already been the subject of scientific studies. Several authors have studied wearables in a variety of ways – one of which is an analysis of possible future uses and improvements for wearables. Cicek (2015) focuses on the possibilities of the usage of wearables. In the paper, the author classifies wearable devices based on their specifications and applications and points out the importance of wearables in different contexts of daily life. Rodgers et al. (2019) presents a more detailed look at the future usage of wearable sensors for active living and rehabilitation. Implications for the future directions are also presented in the work of Seneviratne et al. (2017), in which the authors conduct a comprehensive classification of commercially available wearable devices, examine the issues regarding security, as well as point out the solutions for several problems regarding the functioning of wearables.

Besides the device-focused analyses, there are several consumer-focused studies, in which the researchers examine the adoption of wearables by consumers. Kim & Shin (2015) use the TAM model (Davis, Bagozzi, & Warshaw, 1989) to develop an extended version of the model more deeply, describing the determinants of usage of smartwatch devices. The researchers conducted an online survey among smartwatch device users and assessed psychological determinants of smartwatch usage with the use of new variables such as affective quality, relative advantage mobility, or availability. The researchers find that the mobility and availability factors of the devices influence the perceived ease of use of the devices. Relative advantage and affective quality are also found to affect the perceived usefulness of wearable technology.

Methods and empirical data

The research approach proposed by the authors consists of two stages. The first stage focuses on the aspect of possessing and using them. The applied empirical Model 1 verifies the determinants of the use of wearables – smartwatches or smartbands – among all Internet users in Poland. In the second stage, the adoption of the selected functionalities for measuring physical activity and completing financial transactions is explored. However, the conducted preliminary statistical analysis has prompted the conclusion that almost all users of wearables in Poland use functionalities dedicated to sport and health (93.4% of wearable users), which is consistent with the characteristics and general purpose of devices of this type. Therefore, estimating Model 2, with the tendency to use payment applications, co-existing with the primary sport and health applications, is interesting and novel in Poland. The literature review, research models applied, and the accompanying assumptions brings the following research hypotheses:

H1: Demographical factors profoundly influence the interest of consumers in wearable devices.

H2: Consumers with a high mobility and an active lifestyle will be more likely to use wearables.

H3: The main driver for the use of wearable devices is the usage of digital finance services.

H4: Perceiving NFC payments as easy and secure stimulates the usage of payment functionalities of wearables.

The research models are based on the data from 1012 respondents gathered within the representative survey of Internet users in Poland, conducted with the use of CAWI method in December 2018. Limiting the scope of the respondents to Internet users seemed justified because usage of wearable devices requires consumers' basic ICT knowledge and the online installing of mobile applications to operate the wearable devices. In practice, people who are not Internet users are not affected by this issue. Table 1 below presents the definitions of variables as well as their descriptive statistics. The term 'wearables' is understood as wrist-worn connected devices.

Table 1. *Definitions and descriptive statistics of variables*

Variable name	Definition	Internet users (n=1012)		Wearable users (n=213)	
		Mean	St. Dev.	Mean	St. Dev.
Wearable_use	Possession of wearable device [0,1]	0.2105	0.4079		
Wearable_pay	Conducting payments with the use of wearables [0,1]	0.0583	0.2344	0.2770	0.4486
Gender	Gender of respondents [0-female, 1-male]	0.4931	0.5002	0.5587	0.4977
Age_26_50	Age of respondents between 26-50 years	0.5583	0.4968	0.6385	0.4816
Area	Size of the city of residence*	2.8300	2.1940	2.9250	2.1730
Education	Level of formal education**	4.6040	1.1180	4.6060	1.1220
Mobile_bank	Use of the mobile banking application [0,1]	0.5514	0.4976	0.7653	0.4248
Payment_card	Possession of a payment card [0,1]	0.7994	0.4006	0.8826	0.3226
Social_network	Use of social networking [0-no, 1-yes]	0.8478	0.3594	0.9484	0.2218
Loyalty_card	Use of loyalty cards [0,1]	0.7332	0.4425	0.8498	0.3581
Loyalty_app	Use of mobile loyalty application [0,1]	0.5632	0.4962	0.7653	0.4248
Fitness_app	Use of sports and fitness applications [0,1]	0.2451	0.4303	0.4648	0.4999
Health_app	Use of health-related applications [0,1]	0.1453	0.3525	0.2958	0.4575
Music_app	Specifies the use of mobile music applications [0,1]	0.2678	0.4430	0.4319	0.4965
Dating_app	Specifies the use of mobile dating applications [0,1]	0.1067	0.3089	0.2207	0.4157
Trans_bicycle	Use of bicycle [0,1]	0.3241	0.4683	0.4742	0.5005
Trans_car	The use of car as a driver [0,1]	0.7737	0.4186	0.8638	0.3438
Trans_public	The use of public transport [0,1]	0.4051	0.4912	0.4460	0.4982
Trans_taxi	The use of taxi, Uber, etc. [0,1]	0.1146	0.3187	0.2066	0.4058
Safety_NFC	Perceived safety of NFC mobile payments [Likert scale***]	3.2050	0.9697	3.4370	0.9477
Control_NFC	Perceived control of NFC mobile payments [Likert scale***]	3.2810	0.9138	3.5820	0.9261
Ease_NFC	Perceived ease of use of NFC mobile payments [Likert scale***]	3.6380	0.9048	3.8170	0.9612
Wearable_useful_pay	Perceiving wearables as facilitating payments [1-5 Likert scale***]	3.0890	1.0430	3.5770	0.9615
Intense_life	Declaration of an intense lifestyle [0,1]	3.3340	0.9730	3.6620	0.8458
Friends_fraud	Knowledge about card or mobile frauds of which friends or family have been the victims [Likert scale***]	2.5160	1.1790	2.7700	1.2130

* [1-village, 5-more than 500 thousand inhabitants]; ** [1- primary education, 6- higher education]; *** [1-definitely disagree, 5-definitely agree].

According to the data presented above (Table 1; n=1012), about 21% of all Polish Internet users possess wearables (smartwatches or smartbands). 80% of Internet users have an active payment card, while slightly over

55% use the mobile banking application. One in four users use sports/fitness mobile applications, and about 15% of Internet users use health-related applications. Thus, among Internet users, there are a much larger fraction of digital finance users than users of fitness, sport and health applications. The most popular mobile applications are loyalty apps (56%) and banking apps (55%). In the case of wearable users (Table 1; n=213), only 28% consumers use payment functions. These users also use fitness and sport (46%) and health (30%) applications more often. It is worth adding that, according to the Statista Global Consumer Survey 2019, the distribution of demographic characteristics of wearables users within the sample is consistent with the global distribution of users' gender and age (www5). Besides, the similarity also occurs in terms of the dominant age group of users (25-34): still young, working people.

Results

Since the dependent variables used in Model 1 and Model 2 are dummy variables, standard logit model regressions (Greene, 2003) are applied to explore the phenomenon's occurrence – (1) the usage of wearables and (2) the use of wearables payment functionality. Model 1 (*Wearable_use*) is estimated on a full sample of 1012 respondents (Table 2). The estimation parameters are correct, while a number of cases predicted correctly at 81.3% allows the model to be considered as good. The second model (*Wearable_pay*) is estimated on the sub-sample of wearable users; n=213. For this model, the number of cases predicted correctly amount to a high level of 79.3%. The same set of explanatory variables described above (Table 1) is used for the regression of each model. Table 2 presents the results of the estimations of empirical models.

Table 2. *Empirical Models 1 & 2: logit estimates*

Variables	Model 1. <i>Wearable_use</i> (n=1012)				Model 2. <i>Wearable_pay</i> (n=213)			
	Coefficient	St. Error	Marginal Effect		Coefficient	St. Error	Marginal Effect	
Const	-6.2860 ***	0.7774	–		-4.3160 ***	1.5842	–	
Gender	0.2205	0.1869	0.0284		-0.1336	0.4073	-0.0224	
Age_26_50	0.4115 **	0.1869	0.0521		-0.6685 *	0.4015	-0.1172	
Area	-0.0121	0.0460	-0.0016		-0.0623	0.0964	-0.0104	
Education	-0.1064	0.0859	-0.0137		0.0600	0.1808	0.0100	
Mobile_bank	0.2411	0.2169	0.0308		0.5354	0.5422	0.0820	
Payment_card	0.2962	0.2535	0.0358		-0.6141	0.5738	-0.1159	
Social_network	0.7300 **	0.3489	0.0787		Dropped: Prob (<i>Wearable_pay</i> = 0 <i>Social_network</i> = 0) = 1			
Loyalty_card	0.0904	0.2490	0.0115		-1.2604 *	0.6462	-0.2573	
Loyalty_app	0.6038 ***	0.2143	0.0759		0.1084	0.5481	0.0178	
Fitness_app	0.5531 ***	0.1958	0.0784		0.2020	0.4000	0.0338	
Health_app	0.6436 ***	0.2282	0.0965		1.4930 ***	0.4501	0.2870	
Music_app	0.2186	0.2008	0.0291		-0.6563	0.4238	-0.1066	
Dating_app	0.3830	0.2733	0.0546		0.3405	0.4961	0.0598	
Trans_bicycle	0.6407 ***	0.1850	0.0892		0.0904	0.3859	0.0151	
Trans_car	0.6208 **	0.2600	0.0710		1.0702	0.6760	0.1405	
Trans_public	0.0512	0.2098	0.0066		0.6632	0.4366	0.1128	
Trans_taxi	0.2679	0.2630	0.0370		1.0163 **	0.5056	0.1966	
Safety_NFC	-0.0514	0.1238	-0.0066		0.8712 ***	0.2792	0.1452	
Control_NFC	0.1413	0.1330	0.0182		-0.3388	0.2859	-0.0565	
Ease_NFC	-0.0684	0.1204	-0.0088		0.4446 *	0.2513	0.0741	
Wearable_useful_pay	0.3920 ***	0.1021	0.0504		-0.3816	0.2481	-0.0636	
Intense_life	0.1688	0.1057	0.0217		-0.0395	0.2603	-0.0066	
Friends_fraud	0.1839 **	0.0745	0.0237		0.2740 *	0.1596	0.0457	
<i>McFadden R-squared</i>			0.2035		<i>McFadden R-squared</i>			0.2308
<i>Log-likelihood</i>			-414.7788		<i>Log-likelihood</i>			-96.6844
<i>Number of cases 'correctly predicted':</i>			823 (81.3%)		<i>Number of cases 'correctly predicted':</i>			169 (79.3%)

Discussion

The results obtained (Table 2) did not confirm the H1 hypothesis regarding the broad impact of demographic factors on consumer interest in wearables. Age constituted the only significant variable in Model 1 as people aged 26 to 50 (*Age_26_50*) had a 0.052 higher probability of using wearables. It can be considered that

wearables users are people of working age who have the funds to buy this type of equipment. As a result, surprisingly, wearable devices are not the most popular among the youngest consumers, as might be expected (Buszko, Krupa, & Chojnacka, 2019). On the other hand, the H2 hypothesis was positively verified, since wearables were more often used by mobile persons, i.e. bicycle users (*Transp_bicycle*) and car drivers (*Transp_car*). Moreover, the probability of using wearables was higher for users of mobile fitness applications (*Fitness_app*; ME = 0.078) and pro-health applications (*Health_app*; ME = 0.097), which, similarly to bicycling, means an active lifestyle.

Interestingly, the main digital banking services – payment cards and mobile banking – did not affect the use of wearables. Therefore, finance is not the primary driver for wearables, which leads to the rejection of the H3 hypothesis. However, the only financial aspect that significantly encourages the use of wearables is that consumers perceive the payments with the use of these devices as useful (factor used in TAM methodology; Kim & Shin (2015)). When analysing the marginal effects, the probability of possessing wearables increases by 0.050 (*Wearable_useful_pay*) when moving by one category on the Likert scale. It means that if we convince people who ‘strongly disagree’ to change their minds to ‘strongly agree’ (from 1 to 5) and now consider this functionality useful, the probability will increase by over 0.2. Therefore, financial services, limited to payments, can significantly stimulate consumers’ interest in wearables. The results of Model 1 may suggest that people who use many mobile applications, such as *Loyalty_app*, and *Fitness_app* and *Health_app* are more likely to buy wearables. This correspondence, however, does not apply to *Music_app* and *Dating_app*, which did not affect the studied phenomenon. Moreover, *Social_network* variable has also proved to be an important factor for using wearables. This phenomenon might be associated with the characteristics and so-called “media saturation” of those devices. Wearables are in fact saturated with Social media services, such as messaging or receiving notifications, which is an added value for users and at the same time motivates to use devices of this type (Kopecka-Piech, 2019). In addition to the direct relationship arising from the media saturation, social media is probably associated with the use of wearables due to a similar profile of modern and active users. Social media usage give them the possibility to create new content and interact with other users (Kopecka-Piech, 2018).

In Model 2, regarding the usage of payment functionalities among wearable users, the authors have identified a different set of determinants (Table 2). In contrast to Model 1, the youngest users of wearables are more likely to use this type of payment. Therefore, the coefficient for the variable *Age_26_50* has a negative value. The loyalty app turned out to be irrelevant, while *Loyalty_card* had a strong negative impact on the use of wearables (ME = -0.257). It may be due to the reluctance of the youngest consumers to use outdated plastic loyalty cards.

Among wearable payment users, it also turned out that travelling by taxi (*Transp_taxi*) was significant (a high increase of probability by 0.197), in opposite to bicycle or car. The passenger is obliged to pay for the transport service in the car, of course. Consumers paying with the use of wearables also seem to be attached to taking care of their health, because having *Health_app* increased the likelihood of adopting this payment innovation by as much as 0.287.

For the use of payment functionalities, there are significant factors typical for the adoption of new solutions, which are the subject of the TAM family models (Kim & Shin, 2015). The most important issue turned out to be ‘perceived safety’, because the increase in trust in NFC payments – payment technology also used in wearable payments – by one category in 1-5 Likert scale, increases the probability by as much as 0.145 (*Safety_NFC*). The second important factor was ‘perceived ease of use’, the construct of classic TAM model, but slightly less impacting (*Ease_NFC*; ME = 0.074). These results allow the verifying of the H4 hypothesis positively.

It should be added that wearables users in general, as well as a subgroup of the payment function users, are more often people with above-average awareness of the risks of cyberattacks (*Friends_fraud*). In both examined models (Table 2), the fact that among friends or relatives, there was a fraud incident related to mobile payments or cards, positively affects the interest in these innovations. An increase of digital security awareness is likely at play here.

Conclusions

The obtained results have shown that every fifth Internet user owns wearables, and this rapidly growing market segment should become an area of research and business interest. The main drivers for the use of wearables are the sport and health monitoring functionalities they offer. Therefore, wearables users are mainly physically and professionally active people, and those who are above-average mobile. Undoubtedly, sport functionalities but also communication (text messages, e-mails, weather) are an added value for them. The more smartphone applications can be wearable-enabled, the higher the usefulness of these devices will become. Therefore, device manufacturers should cooperate with mobile service providers in order to make their mobile applications integrated as much as possible with wearables.

The presented results are essential hints for wearables manufacturers. Firstly, the use of loyalty apps increases the interest in purchasing the device. It means that the targeted consumers are open to establishing relationships with their product providers and loyalty programs could be offered to them. An alternative strategy could be the cooperation with retail chains or sport club chains that have popular loyalty programs and could

support the sale of wearables. Issuing virtual fitness pass cards to be used with wearables seems to be a prospective option. Secondly, social networks will likely prove excellent channels to promote wearables; in particular by allowing communication in tandem with the promotion of an active lifestyle. Thirdly, payment functionalities have been underestimated by wearables manufacturers so far. The study unveiled that they can effectively encourage consumers to purchase a device. Marketing communication should underline the usefulness of the payment functions, in the context of quick and effortless purchases while doing sports, e.g. sports drinks during running or cycling.

Wearables are a great combination of sport and finance technologies that bring a novel service quality to the consumer. This is undoubtedly an aspect that deserves future in-depth studies.

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