

Editorial Policy

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Συνοπτική Επισκόπηση

Το διαδίκτυο και οι ηλεκτρονικές υπηρεσίες αποτελούν σήμερα μέσο διασύνδεσης εκατομμυρίων χρηστών παγκοσμίως. Πλήθος συναλλαγών μεταξύ πολιτών, επιχειρήσεων και του δημοσίου απέχουν μόνο μερικά «κλικ» από τη διεκπεραίωσή τους, εξοικονομώντας, χρόνο, κόστος, ακόμα και ενεργειακούς πόρους.

Η χρήση του διαδικτύου στην Ελλάδα αυξάνεται, με ρυθμό βραδύτερο από τον Ευρωπαϊκό μέσο όρο

Στην Ελλάδα ωστόσο το ποσοστό των Ελλήνων που χρησιμοποιεί και αξιοποιεί τις ευκαιρίες που παρέχει το διαδίκτυο σήμερα – παρά τη βελτίωση των τελευταίων ετών – παραμένει χαμηλότερο του ευρωπαϊκού μέσου όρου, όπως τουλάχιστον γίνεται εμφανές από διάφορους επίσημους δείκτες. Στους πολίτες, ο ρυθμός σύνδεσης στο διαδίκτυο τα τελευταία 8 έτη έχει τριπλασιαστεί, ωστόσο υστερεί σημαντικά σε σχέση με τον ευρωπαϊκό μέσο όρο. Το 2011 μόλις οι μισοί Έλληνες ιδιώτες εμφανίζονται συνδεδεμένοι σε ευρυζωνικά δίκτυα, ενώ το υπόλοιπο μέρος του πληθυσμού, φαίνεται διστακτικό έως αρνητικό στο να συνδεθεί. Αντίθετα, πιο ικανοποιητική είναι η εικόνα στο ποσοστό των επιχειρήσεων που χρησιμοποιούν το διαδίκτυο σε καθημερινή βάση, με αποτέλεσμα να υπολείπονται ελάχιστα σε σχέση με τον αντίστοιχο ευρωπαϊκό μέσο όρο. Τέλος, παρά τις σημαντικές προσπάθειες για την πλήρη ψηφιοποίηση των υπηρεσιών του κράτους, τα επίπεδα ηλεκτρονικής διακυβέρνησης στην Ελλάδα, υστερούν επίσης σημαντικά από τα αντίστοιχα ευρωπαϊκά.

Παράγοντες που περιορίζουν τη διάδοση του διαδικτύου στην Ελλάδα

Οι βασικοί παράγοντες που εξηγούν την βραδύτερη διείσδυση του διαδικτύου, αλλά και της χρήσης σχετικών υπηρεσιών στη χώρα είναι κατά σειρά σημαντικότητας οι εξής.

- (i) ασφάλεια συναλλαγών και επιχειρηματική / εμπορική εμπιστοσύνη
- (ii) κοινωνικοί παράγοντες (γλώσσα, κουλτούρα, έλλειψη σχετικών δεξιοτήτων, κτλ)
- (iii) χαμηλή ποιότητα ηλεκτρονικών υπηρεσιών
- (iv) θέματα που σχετίζονται με πνευματικά δικαιώματα και δικαιώματα χρήσης και
- (v) σύνθετες/χρονοβόρες διαδικασίες.

Μέσα από συνεντεύξεις με διάφορους φορείς, αλλά και την αξιολόγηση της σχετικής βιβλιογραφίας επισημαίνονται οι βασικές αιτίες / ειδικά χαρακτηριστικά που ως ένα βαθμό ερμηνεύουν την παρουσία των παραπάνω παραγόντων:

Ασφάλεια συναλλαγών και επιχειρηματική / εμπορική εμπιστοσύνη

- Χαμηλή εμπιστοσύνη προς τις online επιχειρηματικές πρακτικές
- Οι χρήστες ανησυχούν για την ασφάλεια των προσωπικών τους δεδομένων κατά τις διαδικτυακές τους αγορές, ενώ δείχνουν να επηρεάζονται σημαντικά από αρνητικά δημοσιεύματα του τύπου.

Κοινωνικοί παράγοντες (γλώσσα, κουλτούρα, έλλειψη σχετικών δεξιοτήτων, κτλ)

- Η χρήση του διαδικτύου περιορίζεται σημαντικά από την απουσία γνώσης ξένων γλωσσών, ιδιαίτερα ανάμεσα στους χρήστες μεγαλύτερης ηλικίας. Γενικότερα, η χρήση των ηλεκτρονικών μέσων για τη διεκπεραίωση συναλλαγών απουσιάζει από την ευρύτερη ελληνική κουλτούρα
- Οι κρατικές πολιτικές υστερούν ακόμα στην παροχή κατάλληλων ηλεκτρονικών δεξιοτήτων τόσο προς τους ιδιώτες όσο και τις επιχειρήσεις. Τα έργα και οι πρωτοβουλίες των δημοσίων υπηρεσιών για την προώθηση μιας υγιούς διαδικτυακής κουλτούρας είναι κατακερματισμένες και πολλές φορές δεν έχουν θεσμικό χαρακτήρα.

Χαμηλή ποιότητα ηλεκτρονικών υπηρεσιών

- Τα κόστη για τη συντήρηση υψηλής ποιότητας διαδικτυακού περιεχομένου και υπηρεσιών μακροπρόθεσμα είναι υψηλά, αποθαρρύνοντας τους επιχειρηματίες.
- Οι οικονομίες κλίμακας είναι σημαντικές για την υποστήριξη βιώσιμων μακροχρόνιων λειτουργιών αλλά εξαιρετικά δύσκολο να επιτευχθούν στην αγορά ειδικά κατά τη διάρκεια της οικονομικής ύφεσης.
- Η περιορισμένη πρόσβαση σε γρήγορα ευρυζωνικά δίκτυα αποτρέπει την περαιτέρω ανάπτυξη υπηρεσιών ήχου και εικόνας υψηλής ποιότητας.
- Η παράδοση κατ' οίκον των αγαθών που έχουν αγοραστεί ηλεκτρονικά δεν ακολουθεί πάντα συγκεκριμένα πρότυπα.
- Η εταιρική ηλεκτρονική κουλτούρα είναι σε ορισμένες περιπτώσεις ανώριμη επηρεάζοντας αρνητικά την ποιότητα των παρεχόμενων υπηρεσιών και φυσικά την εμπειρία του χρήστη.
- Οι δημόσιες υπηρεσίες δεν είναι λεπτομερώς σχεδιασμένες, ενώ συχνά παρουσιάζονται σημαντικά λειτουργικά κενά.
- Οι δημόσιες πολιτικές υστερούν στην προώθηση επενδύσεων που θα τονώσουν τη ζήτηση.

Σύνθετες / χρονοβόρες διαδικασίες

- Απουσία προτυποποιημένων διαδικασιών
- Αργές και μη αξιόπιστες συνδέσεις

Θέματα που σχετίζονται με πνευματικά δικαιώματα και δικαιώματα χρήσης.

- Οι επιχειρηματίες ανησυχούν για την προστασία των πνευματικών τους δικαιωμάτων από διάφορες μορφές κακόβουλων επιθέσεων.



Συνεπώς:

- Απουσιάζει από τις **επιχειρήσεις** η εταιρική κουλτούρα αλλά και η παραγωγική/λειτουργική δομή που στοχεύει στην παραγωγή υψηλής ποιότητας υπηρεσιών μακροπρόθεσμα.
- Οι **καταναλωτές** δείχνουν χαμηλά επίπεδα εμπιστοσύνης προς τις εγχώριες επιχειρήσεις που δραστηριοποιούνται στο ηλεκτρονικό εμπόριο και ανησυχούν για την ασφάλεια των προσωπικών τους δεδομένων. Άλλο εμπόδιο που περιορίζει σημαντικά τη χρήση υπηρεσιών ηλεκτρονικού εμπορίου και γενικότερα τη διάδοση των ηλεκτρονικών υπηρεσιών είναι και η ξένη γλώσσα.
- Οι πρωτοβουλίες του **κράτους** για την ενίσχυση της παροχής και ζήτησης υπηρεσιών ηλεκτρονικής διακυβέρνησης έχει αποδειχθεί σε αρκετές περιπτώσεις κατακερματισμένη και ανεπαρκής.

Η διάχυση των ηλεκτρονικών υπηρεσιών δημιουργεί οφέλη σε τρεις άξονες

Το διαδίκτυο και η ανάπτυξη ηλεκτρονικών υπηρεσιών μπορούν να προσφέρουν πρόσθετες ευκαιρίες σε όλους τους παίκτες σε μια οικονομία. Η άρση, η έστω η σταδιακή άμβλυνση των υφιστάμενων εμποδίων για τη διάδοση του διαδικτύου και των υπηρεσιών που βασίζονται σε αυτό θα μπορούσε να συνεισφέρει με απτά οφέλη σε τρεις τουλάχιστον διαστάσεις, που αφορούν εξίσου το Δημόσιο, τους πολίτες και τις επιχειρήσεις: Διαφάνεια, απλοποίηση διαδικασιών και προσβασιμότητα.

Διαφάνεια

Μέσα από τη χρήση του Διαδικτύου οι πολίτες μπορούν να συγκεντρώσουν ένα πολύ μεγαλύτερο όγκο πληροφορίας σχετικά με τις αγορές τους και τα προϊόντα / υπηρεσίες που επιθυμούν να καταναλώσουν, ενώ οι σχέσεις συναλλαγής τυποποιούνται και γίνονται πιο διαφανείς. Παράλληλα, στο επίπεδο της σχέσης με το Κράτος, μπορεί να ενισχυθεί η εμπιστοσύνη των πολιτών προς τους θεσμούς μέσω της ανοικτότητας των διαδικασιών και της συμμετοχής σε σχετικές διαβουλεύσεις. Σε επιχειρηματικούς όρους τέλος το διαδίκτυο και οι ηλεκτρονικές υπηρεσίες αποτελούν πρώτης τάξεως εργαλείο προώθησης (marketing tool), καθώς η διαφάνεια αποκτά κεντρικό ρόλο στις B2B και B2C συναλλαγές.

Απλοποίηση Διαδικασιών

Η είσοδος στον κόσμο του διαδικτύου συνεπάγεται την πρόσβαση σε σειρά ηλεκτρονικών εργαλείων που μπορούν – εκτός των άλλων- να βελτιώσουν σημαντικά την αποδοτικότητα των διαδικασιών. Τα αποτελέσματα είναι άμεσα ορατά τόσο στην πλευρά της προσφοράς (επιχειρήσεις και Δημόσιο) όσο και στην πλευρά της ζήτησης (ιδιώτες). Ένα σχετικό παράδειγμα είναι οι υπηρεσίες ηλεκτρονικών προμηθειών, μέσα από τις οποίες τόσο οι επιχειρήσεις όσο και το κράτος μπορεί να εξοικονομήσει άμεσα πόρους, διασφαλίζοντας παράλληλα ένα

ικανοποιητικό επίπεδο ποιότητας αγαθών ή και υπηρεσιών. Παράλληλα διευκολύνονται οι ηλεκτρονικές συναλλαγές του κοινού με δημόσιους οργανισμούς, καθώς απαιτείται μόνο ένας συνδεδεμένος υπολογιστής, απλοποιώντας διαδικασίες που μέχρι πρόσφατα ήταν χρονοβόρες και συχνά αναποτελεσματικές.

Προσβασιμότητα

Η σύνδεση στο Διαδίκτυο βελτιώνει την πρόσβαση στην πληροφορία. Για παράδειγμα η ανάπτυξη του cloud computing τα τελευταία χρόνια δημιούργησε ένα νέο παράθυρο «ηλεκτρονικής ευκινησίας» σε παγκόσμια κλίμακα. Για παράδειγμα πλέον η ιδέα της τηλε-εργασίας ή της εργασίας από το σπίτι υλοποιείται χωρίς να υπάρχουν περιορισμοί. Εξάλλου, ο κάθε πολίτης μπορεί να δημιουργήσει πολυμεσικό περιεχόμενο, χρήσιμο ενδεχομένως σε άλλους χρήστες, μπορεί να ενημερώσει για μια σειρά από ζητήματα την υπόλοιπη παγκόσμια κοινωνία και βέβαια μπορεί να επικοινωνήσει την επιχειρηματική του ιδέα. Σημαντικές προοπτικές εμφανίζονται για παράδειγμα στην εξασφάλιση πόρων που στηρίζουν καινοτόμες ιδέες και επιχειρηματικά σχέδια (πχ. Crowdfunding), αλλά και την πρόσβαση σε νέες αγορές.

Προτάσεις

Για την άρση των εμποδίων στην περαιτέρω διάδοση του διαδικτύου πρέπει να επικοινωνηθούν με κάθε δυνατό τρόπο τα ακόλουθα:

Στον **επιχειρηματικό τομέα** η χρήση του διαδικτύου δεν μπορεί να είναι αποσπασματική ή περιφερειακή. Αντίθετα, ειδικά σε ορισμένους κλάδους πρέπει να είναι καθημερινή πρακτική η οποία θα πλαισιώνει την επιχειρηματική τους στρατηγική. Αυτό μπορεί να σημαίνει εγγραφή των επιχειρήσεων σε δίκτυα κοινωνικής δικτύωσης, χρήση απλών εφαρμογών cloud computing και γενικότερες δράσεις που θα βελτιώσουν την παρουσία τους στον ιστό. Το διαδίκτυο αποτελεί αρωγό των καινοτόμων επιχειρήσεων καθώς βοηθά στην επίτευξη οικονομικών κλίμακας συντομότερα με αποτέλεσμα οι επιχειρήσεις να διαφοροποιούνται μέσα σε ένα διαρκώς απαιτητικό περιβάλλον.

Οι **πολίτες** μπορούν να ωφεληθούν από το Διαδίκτυο, σε όρους κόστους και χρόνου, ενώ η ηλεκτρονική τους παρουσία μπορεί να τους ωφελήσει επαγγελματικά και κοινωνικά, καθώς εύκολα μπορούν να δημιουργηθούν νέες οικονομικές ευκαιρίες. Όμως, πρέπει να εξηγηθούν και οι μέθοδοι προστασίας τους από κακόβουλες διαδικτυακές ενέργειες.

Τέλος ο **δημόσιος τομέας** πρέπει να υιοθετήσει ένα πιο ενεργό ρόλο στο οικοσύστημα των παρεχόμενων υπηρεσιών προς τους πολίτες. Δημιουργώντας μια ολοκληρωμένη πλατφόρμα από υπηρεσίες, καλλιεργείται και αυξάνεται και η σχετική ζήτηση με αποτέλεσμα τη γοργή μετάβαση στην κοινωνία της πληροφορίας. Σε επίπεδο πολιτικής, το κράτος πρέπει να λάβει τον ενεργό ρόλο του, βοηθώντας –με κάθε δυνατό τρόπο τον ψηφιακό/ηλεκτρονικό μετασχηματισμό, με ταυτόχρονη παροχή σχετικών κινήτρων τα οποία θα αναθερμάνουν το ενδιαφέρον τόσο των επιχειρήσεων όσο και των ιδιωτών.



Executive Summary

The Internet connects billions of users worldwide, providing the necessary infrastructure for the development of modern services that facilitate our daily life in different ways. Today various transactions between individuals, businesses and the State can be completed with only a few clicks, saving time, energy and resources.

Expansion of Internet use, slower compared to EU

However, it seems that significant asymmetries exist in Greece today, as a rather limited part of the society is aware and benefitting from the opportunities provided by the Internet. The adoption of online services is slower compared with the European average rates, as measured by various indicators. In fact, even though there is progress in most of the surveyed areas, Greeks lag behind in important aspects of Internet diffusion. Among individuals, the Internet take-up rate has more than tripled over the past 8 years, remaining however below the European average. In 2011, half of Greek individuals had broadband access to the Internet, while the other half presented quite strong and conscious reasoning for not wanting to get connected (the “unwilling” mass). On the other side, the majority of entrepreneurs are connected and the gap (when compared to the EU) is small yet significant. Finally, despite the great effort to create a full spectrum of e-government services in the public sector, more steps are still required at the level of both supply and demand (i.e. the use of the Internet by citizens and businesses).

Factors hindering Internet diffusion in Greece

The study identifies and explains the reasons for the slower than anticipated (at least at the beginning of the 2000s) growth of Internet use in Greece. A series of factors hindering e-services adoption were identified, based on our empirical research. These factors can be summarized as follows: (i) limited commercial trust and user concerns for transactions security, (ii) factors connected with social background, (iii) low quality of available Greek electronic services, (iv) intellectual property rights and privacy issues and (v) complex/time consuming processes.

Our analysis highlights specific characteristics that explain the resilience of the above factors, despite progress during the last decade:

Limited commercial trust and user concerns for transaction security:

- Commercial trust towards online business is poor.
Users are concerned about the security of their identity and online privacy.
- Internet users are often intimidated by the media's negative coverage of Internet privacy incidents.

Social factors

- Older people tend to speak only Greek while younger people do not always feel confident with their second language. Greek society is not very familiar with electronic transactions and services.
- Policy actions by the Greek government fall behind in helping individuals and professional acquiring the necessary e-skills, being fragmented and lacking an institutional approach.

Low quality of available Greek electronic services:

- The costs for maintaining high-quality Internet content and services in the long run are high, thus discouraging local service providers from entering or staying in the market.
- The economies of scale, that are vital to support sustainable long-term operations, are not easy to be achieved during the recession.
- Home delivery of physical goods and services does not always meet customer expectations.
- Corporate culture towards Internet business is poor, affecting negatively the quality of service and user experience.
- Public policies are not properly designed to promote supply-side investments. Public services are not carefully planned and are rarely end-to-end.

Complex/time consuming processes:

- Lack of a standardized interface.
- Slow and sometimes unreliable connections.

Intellectual property rights and privacy issues:

- Businesses and entrepreneurs are concerned about the protection of their intellectual property rights.

Hence:

- Businesses lack the corporate culture and the operational structure to deliver high-quality content and services in the long-term.
- Consumers have low confidence in the domestic e-commerce businesses and are often over-concerned about their privacy and the security of their personal information. Furthermore the language seems to frequently create a barrier for consuming non-Greek content and services.

- Public sector's initiative to promote the demand for and the supply of electronic services has proven fragmented and insufficient.

E-services adoption and the three dimensional framework of its effects

Regardless of the inherent characteristics of society and business that hinder the wide use of electronic services, Internet provides excellent opportunities for all the agents of the economy. Overcoming the existing barriers can provide more opportunities for improvement in three dimensions: transparency, simplicity and accessibility.

Transparency

Through the adoption of modern Internet services, customers can obtain a relatively good amount of information regarding future purchases, maximizing their gain in the long run. Moreover, public trust towards the institutions is being reinforced through direct access to information through the Internet, boosting openness at the governmental level. Finally, Internet and electronic services can act as a marketing tool, improving transparency on a corporate level, through the publication of annual CSR reports, special achievements in R&D and so forth.

Simplicity

Internet adoption gives access to a broad series of e-tools that, inter alia, can improve considerably the efficiency of operation. The results are obvious both on the supply (firms and government) and the demand side (individuals). E-procurement can be a relevant example, through which firms and governments can minimize their running costs, while ensuring a minimum level of quality. Thus, competitiveness – the key ingredient for economic development – can be an easier target to obtain. Moreover, more electronic interactions with the public organizations can take place from a connected device, significantly simplifying procedures that often are unpleasant and time consuming.

Accessibility

Internet connected computer networks improve accessibility. For example, the development of cloud computing during the past few years has enhanced mobility, worldwide. Moreover, with the extensive use of simple network facilities, the idea of working from home has spread over the European labor market, since the benefits of its application are numerous both for the economy and the environment. In addition, global Internet diffusion has created the vital base for transmitting high quality content, both for entrepreneurs and individuals, with practically



minimum costs. Local insight and specialized expertise is critically important in today's globalized economy and this creates an advantage for local start-ups over established giants in respective industries (e.g. the media industry). Finally, it appears that Internet can open new, modern paths for funding, promoting innovation not only on a national level, but globally (i.e. crowd funding). Innovation can become a major differentiator for the local economy, underpinned by faster Internet access and the ability to remotely manage decentralized production and operations.

Challenging the state of things - Recommendations

All parties involved in the Greek market need to leverage Internet services for economic growth. To this end we offer a set of recommendations for businesses, individuals and the government.

Enterprises should endorse the use of the Internet as a standard practice and not conceive it as a complement to their business strategy. This may involve engaging in the social media space, improving the corporate online presence, installing Cloud Computing services, offering better quality services and customer support. Internet helps innovative enterprises achieve scale faster and makes their value proposition a major differentiator in the global economy. The main requirement is a sound and long-term entrepreneurial model around an innovative service that will help the businesses grow in Greece and expand internationally.

Individuals can benefit from becoming more active participants and content contributors in the Internet space. Their exposure, both professional and social, can develop significant economic opportunities. At the same time, consumers must understand how to protect themselves and their families from threats arising from the careless use of the Internet.

Finally, the public sector should adopt a more active role as a supplier of integrated public services to the citizens. Creating useful end-to-end public services communicates the right signal to the consumers and the service providers, stimulating in the meantime the demand for advanced electronic services. On the policy side, the Government has to act as an adequate regulator, sponsoring the digital/electronic transformation of the economy and providing the right incentives to encourage this change. Businesses as much as individuals respond to incentives and therefore setting the right ones is a key element of all successful public policies.



Introduction

Internet adoption nowadays has altered dramatically our daily life. Beyond doubt, the Internet and the services it enables (e-services) are creating opportunities for more efficient economic activities all across society. Businesses that adopt Information and Communications Technologies (ICT) and endorse Internet services as an integral part of their business strategy, aim at increased competitiveness by effectively lowering their marginal costs of production and service delivery. Individuals and consumers on the other hand can purchase a service or a product easier, with just a few mouse clicks, and typically at better prices than those of a physical store. Finally, public organizations can leverage the Internet reach to improve their services and the overall citizens' satisfaction.

In the last decade, Internet penetration rates as well as the level of use of the Internet in Greece improved dramatically. However, the country is still trailing in the OECD and EU ranking. This study is conducted by the Foundation for Economic and Industrial Research (FEIR/IOBE) and is targeted at identifying and analyzing the critical factors that prevent the use of Internet services in Greece. The focus of the study is on the factors that impede the commercial and social exploitation of the Internet and translate to limited growth of e-commerce, e-government and other services by and for individuals, businesses and the public sector in Greece, today.

The report is structured in 5 chapters. The first chapter begins with the landscape assessment of Internet and e-service diffusion in Greece compared to other European countries. Data are examined at three levels: households/individuals, businesses and public organizations. It also provides deeper insight to the trends and the characteristics of the Greek services ecosystem. Chapter 2 discusses the factors that are hindering the wide use of the Internet among individuals, businesses and the government. In chapter 3 we identify opportunities for the Greek citizens and businesses stemming from the increased use of the Internet. The concluding chapter provides recommendations for business owners, individuals and policy makers in Greece.

Methodology of the study

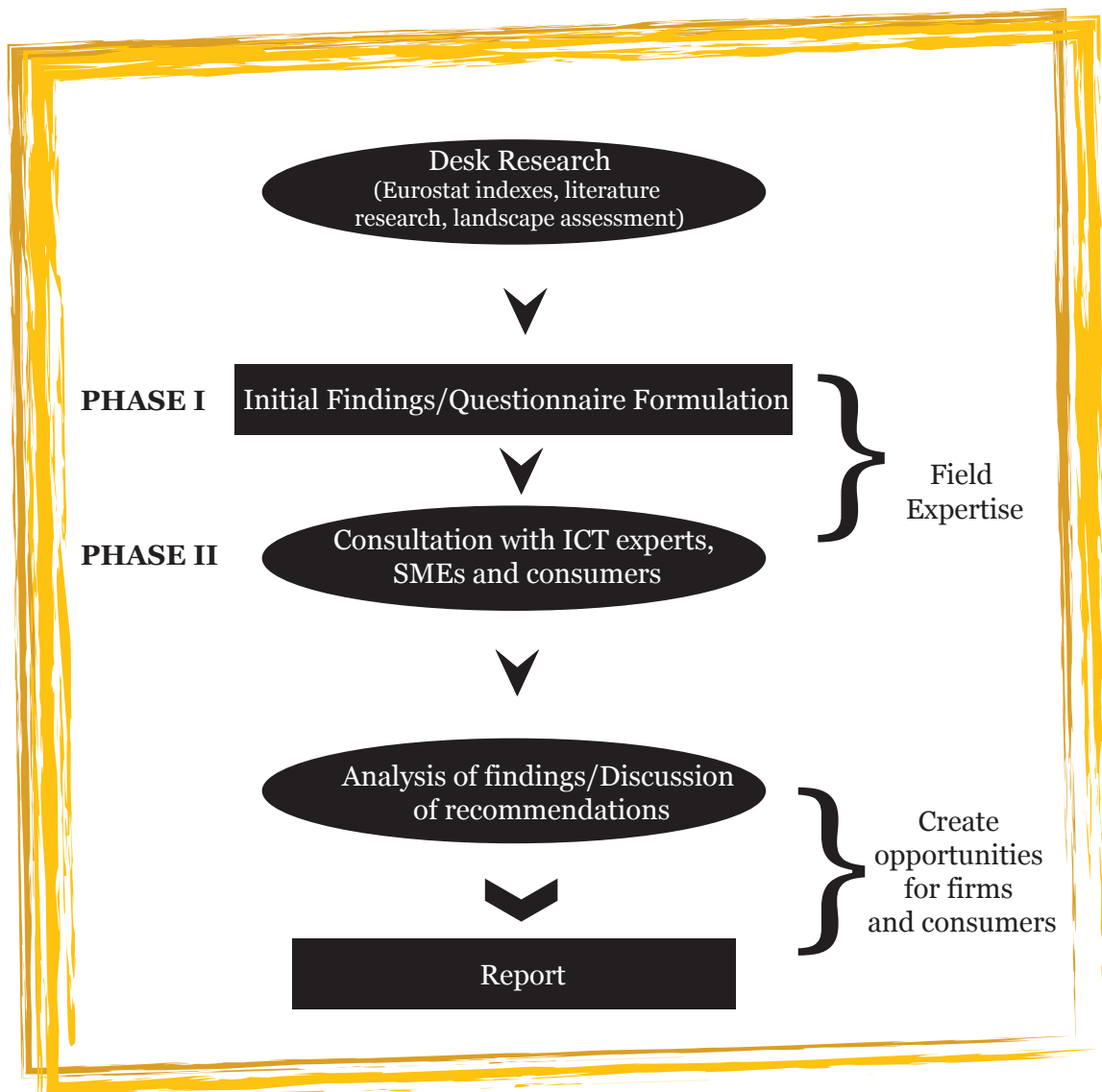
Three methodological tools were used during the research period: desk research, field research (interviews with experts) and finally quantitative and qualitative analysis and verification.

- **Background (desk) Research:** The latest available data on Internet penetration, e-services availability/use and other similar qualitative and

quantitative data for individuals and businesses were extracted from the European statistics database, Eurostat. Similarly, information and data from relevant scientific databases were retrieved.

- **Consultation with experts and users:** Interviews with the experts took place in two phases. In phase I, a questionnaire with the all relevant factors hindering e-services diffusion found in the literature were presented to a mixed sample of 94 participants, who were asked to rank the factors' importance. The prevalent factors were used as a basis in formulating more detailed questionnaires for phase II. Different questionnaires were distributed per respondent type (policy makers, ICT experts, commercial enterprises, consumers and consumer associations), covering 47 interviewees.
- **Analysis of findings and recommendations:** The research team analyzed the results obtained with the questionnaires and the expert interviews. The findings were put to a validation exercise through discussion with some experts, an action that led to the formulation of key recommendations for promoting the e-services diffusion in Greece.

Research Methodology Outline



The state of Internet use in Greece today: facts and dynamics

The purpose of this chapter is to highlight the facts and basic figures about the use of Internet and e-services in Greece. As a rule, the data are presented at three levels: a) individuals/households, b) businesses and c) Government. Viewed from the perspective of service creation and delivery, these levels represent the major stakeholders of the electronic services market: a) **Consumers – user communities (individuals/households)** are both customers consuming content and services, but they can act also as small scale content providers, b) **Businesses** are the creators and distributors of content and services, users of B2B and / or B2G services and c) the **Public sector (Government)** which affects both the supply (investments) and demand for Internet services.

Before explaining the interactions of these stakeholders and the dynamics in today's Internet environment in Greece (last section of this chapter), some basic facts are necessary to understand the status quo in the market.

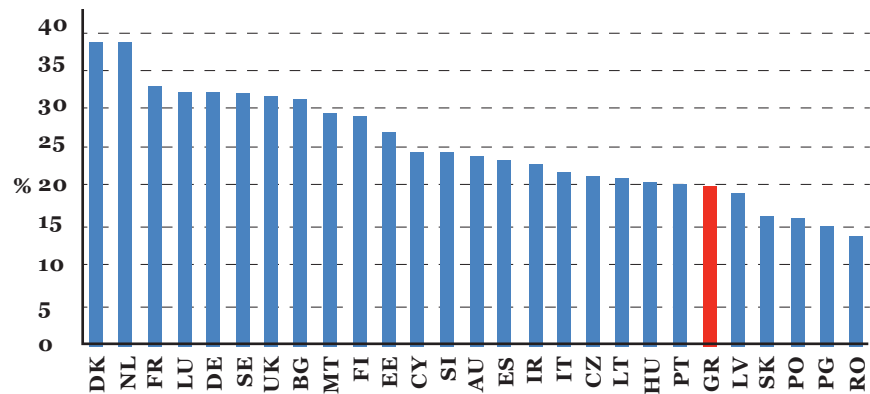
1.1 Individuals/Households

The Internet take-up rates have more than tripled over the past 8 years, due to increased demand and significant supply-side public and private investments in services and infrastructure. The statistics, however, indicate that in most cases the country has a long road ahead to arrive at Europe's average. In 2011, a little over half of the Greek households were connected to the Internet with 72% of them accessing the web on a daily basis. The corresponding EU27 average of connected households¹ exceeded 73%. As shown in Figure 1.1, Greece ranked 24th in terms of broadband penetration, ahead only of Latvia, Slovakia, Poland, Bulgaria and Romania.

In 2011, the majority of Greek Internet users (88%) preferred accessing Internet at home, 35% of them at work, while 8% at places of education. Respectively, 93% of the European users accessed Internet at home, 42% at work and 12% at places of education.

¹ With at least one member in age group 17-74

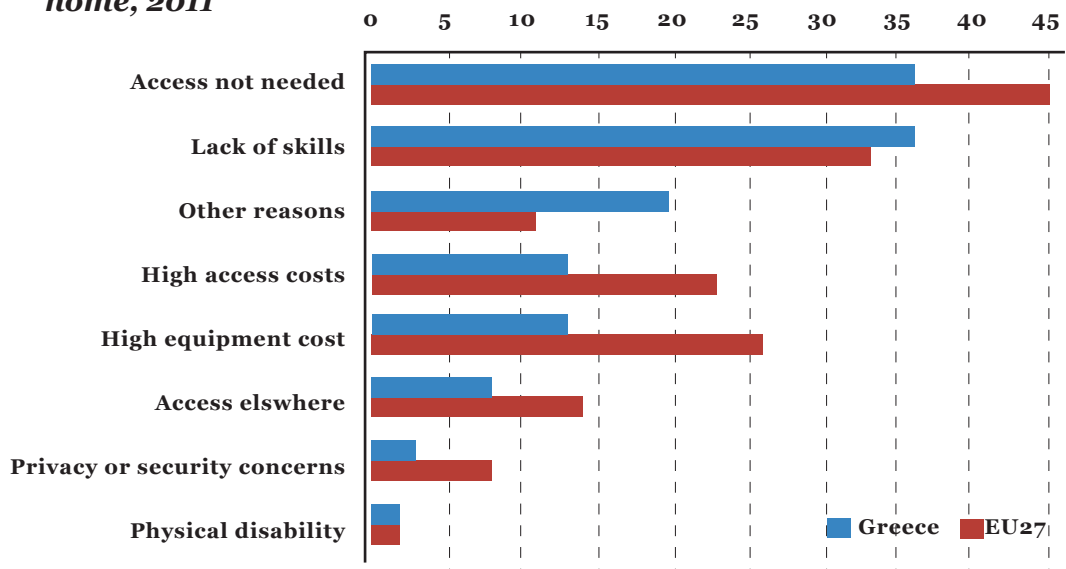
Figure 1.1: Broadband Penetration Rate (number of dedicated high speed connections per 100 inhabitants), January 2011



Source: Eurostat

A significant portion of the Greek households (47%) continues to stay offline. This segment of the population is recognized as the “unwilling mass”. Typically, their choice is made based on the belief that the Internet has nothing of value to offer (36%). Equally, non-users consider the Internet use as a process that requires extra skills that are difficult to obtain (Figure 1.2). The costs (both for access and equipment) seem to concern less than 15% of the non-users, way below the EU average.

Figure 1.2: “The Unwilling” - Reasons for not having Internet at home, 2011



Source: Benchmarking Digital Europe, 2012home, 2011

Empirical data show that Internet use in Greece is strongly correlated with socioeconomic factors such as age, geographical location, educational background and income.

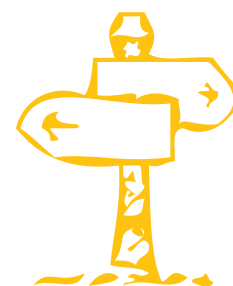
Age is negatively correlated with the use of Internet in Greece, like in most European countries. The most intensive Internet users are people between 16-24 years old, a trend shared among the EU27. Specifically, nearly eight out of ten youngsters (16-24) have Internet access, while 80% of them are daily users. Moving up the age scale, only 11% of Greeks between 55-74 years old use the Internet at least once a week, a percentage much lower than the EU27 average (40%). This age divide can be observed across all member-countries, but the gap is strikingly wider in Greece. Generally, the divergence with the European averages is closing among younger users, while the gap for older age groups is widening.

Education is positively related to Internet usage. The Greek students are the social group exhibiting the highest Internet penetration with rates exceeding 94%, slightly lower than the EU27 average (96%). Individuals with high formal educational background (academia, researchers etc) are also highly connected, with 80% of them using Internet and e-services frequently. On the other hand, Internet take-up rates amongst people with lower formal educational backgrounds are much lower (40%). Nevertheless, Internet diffusion over the past decade has been improving across all educational levels.

Annual disposable income exhibits a strong positive relation with Internet usage in Greece. The use of Internet for education, e-commerce, communication and multimedia consumption generally increases with income. In 2010 almost half of the individuals with annual income over €75,000 were using the Internet for emailing, while only 14% of less than €25,000 earners accessed the Internet for that reason. The same trend is repeated among EU27 members while the equivalent averages are considerably higher (72% and 32% respectively).

Regional differences – referring mostly to the degree of urbanization and population density² - also play a critical role in the penetration of broadband and e-services. In Greece, the majority of Internet users live in Attica, where almost 50% of the population is situated. Internet penetration is considerably weaker in the regions of central Greece and other remote regions. To a great extent, this is the result of the varying quality of the telecommunications infrastructure available in the country. Densely populated areas with higher demand attract private investments that support higher and more reliable Internet connection speeds. Broadband penetration has increased in all regions; still the geographical divide is not closing, being steadily wider than the corresponding EU27 average.

The above mentioned factors relate to the significant Internet adoption gap between Greek and European users. By and large, the current economic recession, which diminishes the average disposable income and restrains the incentives for



² Goldfarb, A., Prince, J., 2008. Internet adoption and usage patterns are different: implications for the digital divide. *Information Economics and Policy* 20, 2-15.

pursuing higher education, is posing a strong threat towards improving Internet penetration and e-services usage. Considering the economic outlook we do not expect these trends to improve in the immediate future.

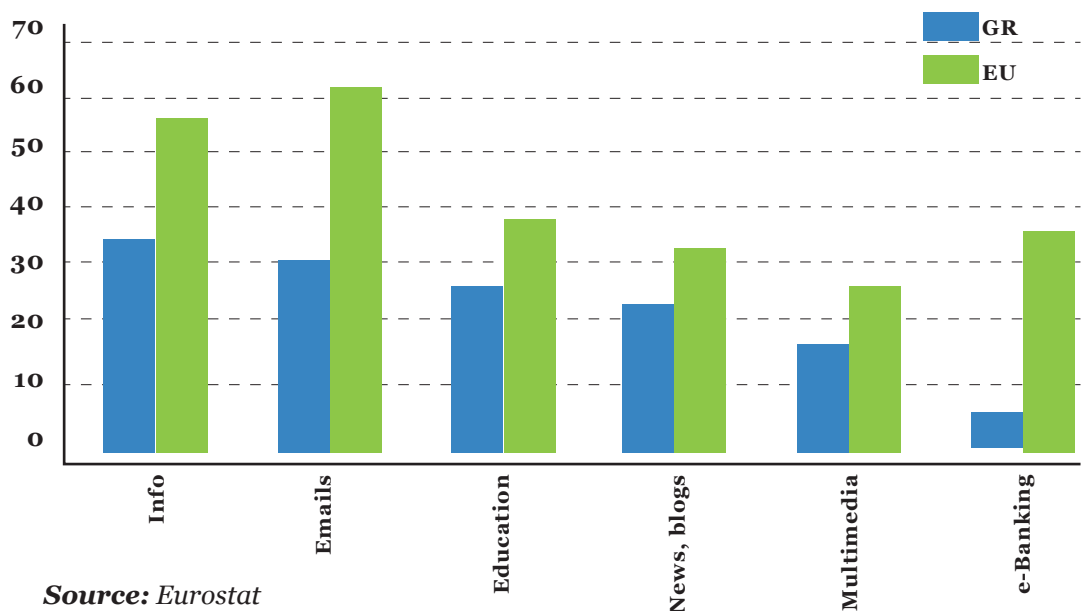
Online activities of Greek Internet users

Greek users that are fully versed in the Internet and use electronic services comprehensively are the few, not the many. In 2010 (latest available data), almost 36% of Greek connected users accessed the web for acquiring information on products and/or supplied services. Meanwhile, 32% of the users were online mostly for communicational purposes (sending and receiving emails). Also, 28% of Greek Internet users employed the medium as a research tool, while one out of every four Greeks blogged frequently. Less than 18% of the users accessed multimedia services (e.g. subscribing to audiovisual content services). A much smaller portion (6%) used web services to manage personal finance (e-banking) or personal issues of administrative nature (Figure 1.3).

In all cases, the performance is significantly below the European average. In fact, a very slow rate of divergence between Greece and EU27 is exhibited in the data for 2006-2010 (see Appendix).

The pattern of web use in Greece more or less covers the entire spectrum of available services, while based on official data the pattern is relatively stable in time, following similar European trends (see Appendix).

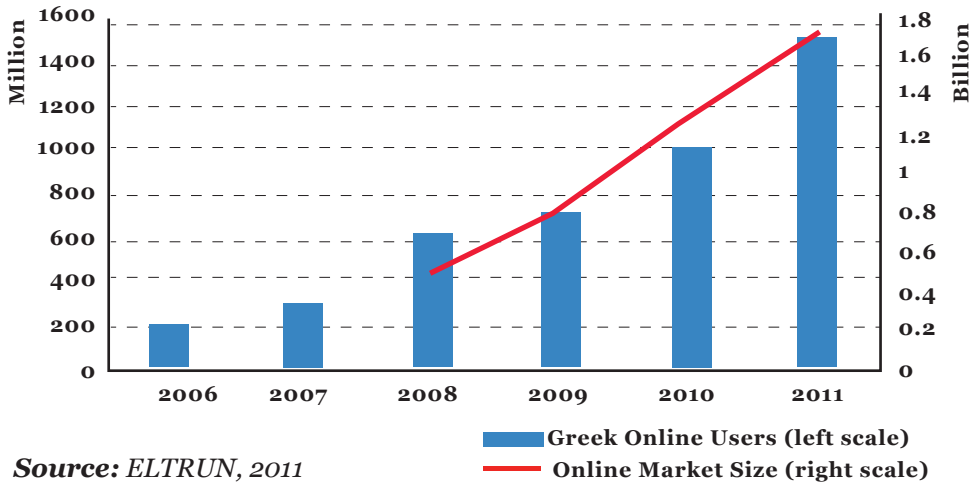
Figure 1.3: Internet Use – Individuals, 2010



With regards to e-commerce (from the consumer’s perspective), the Greek online market grows slowly but steadily (Figure 1.4). The value of the market exceeded €1.6 billion in 2011. Despite the abundant e-shops found on the Internet, Greeks remain hesitant. They buy and sell via the Internet less frequently than the average European. In 2011, the number of electronically conducted transactions

increased, however less money was spent in each e-sale, mainly because of the contraction in disposable household income and the negative psychology reinforced by the recession.

Figure 1.4: Greek Internet users and Greek online market size, 2006-2011



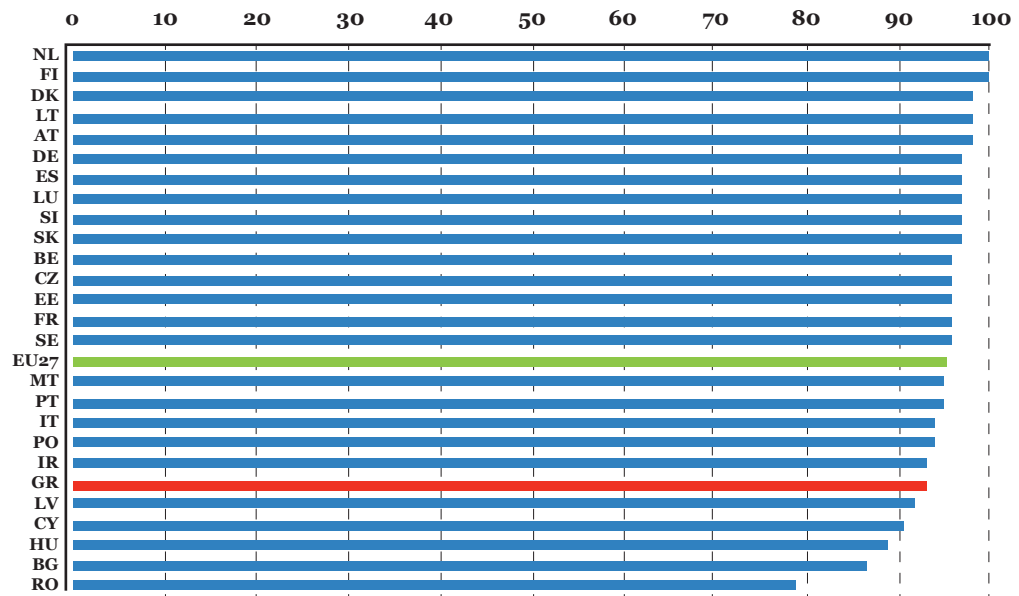
1.2 Businesses

The proliferation of Internet services has opened the door to a whole new set of business models, with an emphasis on improving efficiency in all operational and commercial aspects. This transformation has expanded beyond the narrow boundaries of e-commerce to other business activities and is growing rapidly across the world. A great deal of the everyday transactions between buyers, suppliers and public services (e.g. tax office, customs) that were once equated to bureaucratic and time consuming processes can today be done electronically. Services like e-invoicing, e-sales, e-procurement and e-auctions, are part of the toolbox that ensures corporate efficiency. The financial savings from e-invoicing among the EU27 countries are estimated at €64.5 billion per year. In this section we explore the different aspects of electronic services for businesses as well as their penetration in the domestic market.

The Internet connectivity of the Greek businesses lags behind the European average, with 93% of the Greek enterprises having an Internet connection. The EU27 average is 95% regardless of size and turnover (Figure 1.5). Zooming in on smaller firms (mini and micro firms with less than 10 employees) the Internet connectivity rates are considerably lower, mainly due to the lack of appropriate corporate skills and sluggishness in adopting innovative solutions for production enhancement. At any rate, both the Greek and the European averages have steadily improved over the years (see the Appendix).



Figure 1.5 Percentage of enterprises connected to the Internet, 2011



Source: Eurostat

Greek companies are in the early stages of incorporating the Internet use into their core corporate strategy. Only 4% of the Greek businesses order raw materials and merchandise online. In Europe, the corresponding figure is 19%, giving the European counterparts a strong competitive advantage in terms of production costs. In general, e-procurement services are far more common in the business world than e-sales, as there is a constant need for specific goods and services (e.g. production supplies, maintenance).

Fewer companies in Greece offer electronic platforms for online ordering, reservation or booking than in Europe, limiting the electronic market both domestically and internationally. In 2011, only 9% of Greek businesses received orders electronically, against an average of 15% in EU27. Greek firms are gradually appreciating the benefits of running an e-sales and e-procurement platform, however the current economic situation in the country and the limited availability of capital inhibit significant investments.

As a result, in 2011 only 4% of the annual Greek entrepreneurial turnover derived from e-commerce (e-sales), a portion significantly lower than the EU27 average of 14%. However, the increasing price awareness of the Greek consumer pushes businesses towards e-business solutions to cut their costs and retail prices (e-businesses exhibit a small fraction of the operational costs of a physical store).

Purchasing and selling goods are not the only activities endorsed by online businesses in Greece. In 2011, more than 7.000 firms issued invoices electronically to the value of €8 million in total. By the end of 2012, the number of firms using e-invoices is expected to increase by another 40% with the total



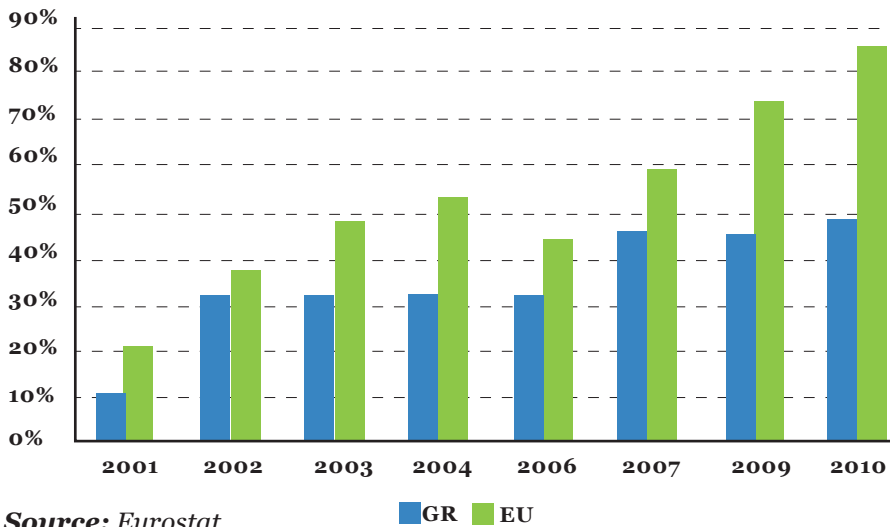
transaction value increasing by more than €13 billion, according to Athens University of Economics and Business. E-invoicing offers an ideal platform for minimizing corporate costs.

Last but not least, the outlook of the online advertising market demonstrates a shift to the Internet. Online advertising expenditures grew to €76 million in 2011 with a year-on-year growth of 25%.

1.3 Government

To quantify the adoption of e-government services, Eurostat has created a benchmarking index that measures the on-line availability of the 20 most basic public services. The supply side indicators show that the availability of Greek e-government services had grown significantly in the past few years until 2007, although it has stopped developing thereafter. Since 2007 nearly half of Eurostat’s benchmarking services were offered online in Greece, and were accessed by enterprises and individuals frequently. The most basic 20 e-services stood at an average availability of 82% across Europe in 2010, a strong increase from 69% in 2009 (Figure 1.6).

Figure 1.6: E-government supply (based on Eurostat’s 20 benchmarking services)



Source: Eurostat

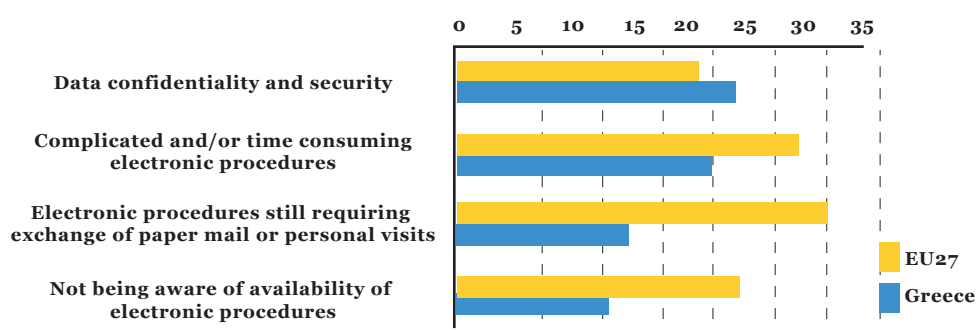
On the demand side, Greek firms use e-government services to receive information or submit completed forms electronically. Greek e-government services were used by 77% of the domestic firms in 2010 (latest available data) slightly higher than the corresponding EU27 average of 76%.

Almost 24% of the businesses that prefer not to interact with public services electronically lack trust in the available platforms, while 22% of them find e-government services too complicated or time consuming (Figure 1.7). A remarkable share (more than 14%) believes that the electronic procedures still

require the exchange of paper mail or personal visits to the public organization, while finally 13% of the entrepreneurs are not informed about the availability of e-government services. Also, only 13% of Greek citizens used e-government services in 2010, less than half of the EU27 average of 32%. The numbers generally improve but at a far slower rate than the European averages.

Similar results can be observed in the country's Network Readiness Index, a multi-element index published by the World Economic Forum. In 2012, Greece ranked 59th (among 142 countries), exhibiting intense organizational weaknesses, rendering it unable to take full advantage of the overall good ICT infrastructure.

Figure 1.7: Reasons that e-government services are not being used by firms, 2011



Source: Eurostat

1.4 The dynamics in the Greek services ecosystem

The interactions and interdependency of Internet services stakeholders shape an ecosystem with powerful and changing dynamics. Traditionally, service and content providers had the largest influence in the service market. They were responsible for designing, creating, marketing and delivering services to the consumer masses. Service delivery was typically one-way. This model is still largely observed in the media industry (press, radio, TV, etc.).

However, the widespread use of Internet and digital technologies has dramatically shifted the focus of the market from service providers to users. Consumers take a more active role in the feedback process, as well as in service creation. The free flow of information facilitates consumer choice and emancipation.

Consumer feedback plays an important role. It is not only used by service providers to improve their services or tackle business inefficiency. Users are organized in self-managed or moderated user communities centered on common topics of interest. The user community helps the consumers evaluate a service and make informed subscription and purchasing decisions. Additionally, users can blog about topics of interest, maintain their own audience and even build their personal brand. Finally, the technology permits the users to create

easily their own content and services and to disseminate them, practically at no cost, to the rest of the world.

On the other hand, today's traditional service providers are using the Internet to produce and distribute their products and services more efficiently than in the past. In addition, they leverage the increasing adoption of the Internet and aim at using their online presence as a marketing and facilitation tool to provide information and offers to the consumers. However, not all businesses engage in the Internet to the same extent, nor do they focus with the same level of intensity on the digital economy.

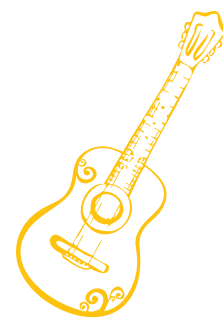
Hence today, on the one hand there is a pool of firms, consumers and part of the Public sector that make Internet a part of their mainstream economic activity and on the other there are those that are reluctant to take a strong hold of the opportunities offered by the Internet as a tool to increase efficiency, quality and scope of services and personal professional benefits. The prevailing characteristics of the Internet ecosystem today in Greece are the following:

Big firms invest more in their online activity while the smaller firms prefer to keep the local nature of their business intact.

Big retailers in Greece appreciate the benefits of doing online business and run campaigns to motivate a stronger consumer engagement. Wind Hellas for example, provides special discounts if customers register their new mobile telephone plan online. The ICT retailer Plaisio offers lower prices if goods are ordered online. Home appliances retailer Kotsovolos-Dixon even allows customers to “negotiate” the price of a product or service online, recreating the traditional experience of haggling in a bazaar.

On the other hand, micro and small enterprises (below 50 employees), which represent almost 800,000 establishments in the country (nearly 96% of all firms), seem not to have the necessary resources and skills to invest in Internet services. It is also the nature of the typical Greek firm (freelancers and family businesses with a local character) that makes most of them hesitant. For example, taxi drivers, plumbers, electricians, gardeners, open markets merchants, delivery stores, guides, kiosks, seasonal workers, lawyers, doctors and small-scale retailers see little value in shifting their focus towards the online economy. There are cases where various professionals are experimenting with the Internet, but the numbers are far from marking a strong trend.

Usually, the value of Internet, as perceived especially by micro and very small firms, is that their on-line presence (i.e. a web site) promotes traditional (off-line) sales. This in fact is true even for those firms that offer e-shopping functionality on their web sites. One interviewee stated that “[...] out of the total purchases from customers that have visited our online site, nearly 15% are done electronically. Most customers either call or visit our store”.



³ Figure according to the Hellenic Statistic Agency. However, due to absence of official data and given the economic recession, the actual number of micro and small firms is estimated today less than 700.000.

Consumers juggle between their shopping preferences for physical interaction and online opportunities for cost savings and product variety.

We should always keep in mind that a part of traditional shopping relies on impulse sales. It is very hard to replicate this mental and cultural process via the Internet. Even today only a few of the big international retailers, such as Amazon, have implemented this process successfully online, as this requires a business configuration that is fundamentally different from the offline world.

In other words, shopping in Greece is a social activity and not just an impersonal transaction that needs to be completed. Physical interaction is important for Greeks and is inextricable to the purchasing process. Naturally, with more than 3000 hours of sunshine in Greece on a yearly base, traditional commerce and services have an advantage over online activities. Furthermore, consumers feel more confident with the existence of a physical store that will help them take care of any problems with the goods and services they have bought on-line, especially in the cases of after-sales support.

On the other hand, there are factors that could boost e-services. Time constraints, the sheer variety of products and services and of course cheaper prices, favor the use of e-services. These factors gradually affect the diffusion of e-services in Greece and could foster the creation of a critical mass of online consumers, thus pushing more businesses to go online.

Greeks prefer traditional methods of payment but the use of electronic money is growing.

A recent survey by Mastercard⁴ revealed that 38% of the Greeks seem to prefer the collect-on-deliver (COD) method of payment when they order online. Consequently, many online merchants continue to offer the COD payment option although COD comes with higher commission rates and takes longer to debit their accounts. However, another 38% use their credit cards, while 26% prefer a prepaid card. This indicates that security concerns seem to be amplified.

Nevertheless, the success of online “deal offering” sites in Greece suggest that the nature of the problem is different. People are starting to use their credit cards to purchase products and services that appear attractive (special offers, affordable prices) but unreachable by any other means of payment. Apparently, the economic benefit anticipated in a service seems to overcome the consumer’s propensity to use traditional forms of payment. According to George Hadjigeorgiou, founder and ex-CEO of the Golden Group, “[...] *when we started goldendeals.gr we were told that the business will fail because Greeks are not accustomed to use their credit cards online. The success of GoldenDeals proved those skeptics wrong. Greeks are willing to use their credit cards for online shopping as long as they find value in a product or service*”.

The use of social media and content creation by Internet users has become mainstream.

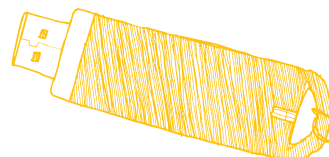
Greeks have embraced social media networks and blogs as a form of communication, networking and expression. Statistics show that the number of users in Facebook - the most popular social media platform in Greece - doubled in 2012, growing to nearly 3 million, almost 60% of the online population. Social media users engage primarily in networking and communication activities with friends and peers. Job search is another popular activity of Greek users in the social media platforms, with LinkedIn being used most frequently by most job seekers and job professionals. In addition, one in four Greek users has an online blog.

The strong preference of the Greek users to social media turns brands and advertisers to the social media space. According to Consultancy Burson Marsteller, in January 2012 53% of the members of the Hellenic Advertisers Association (HAA) were using at least one social media platform, with 32% of the companies active in the social media having multiple accounts in the four most popular social media platforms in Greece (Facebook, Twitter, YouTube, and blogs).

The Government wishes to promote Internet use but public policies and e-government services have so far fallen behind expectations.

The Greek state in the last decade has shown willingness to contribute to the development of e-business in the country. Subsidization frameworks have helped numerous small and medium enterprises to enhance their operations with the provision of personal computers, Internet connections and online presence. However, considering the entrepreneurial structure of the Greek productive system (family-run, micro firms), some of the prerequisites for applying to various subsidy programs could not be met. For example, businesses in remote areas or businesses run by the owner alone would not apply for a subsidy that requires hiring one or more employees. In this context, the public policies do not in full address the special needs of local entrepreneurs and are often insufficient for motivating change. In addition, policies to promote the nationwide availability of high-speed broadband access to stimulate demand have not yet been fruitful, holding back Greece behind the EU27 average in terms of broadband adoption.

On the supply side, the Greek Government has launched several e-government services as part of a longer-term plan to improve efficiency of the public sector and to stimulate demand for Internet services in society and the private sector. Indeed, e-government services have mushroomed during the past 10 years. However, in many cases the quality level of the public services is low; they are not end-to-end, and they require traditional physical transactions of business and citizens with public authorities.



Factors affecting the supply and demand of the Internet

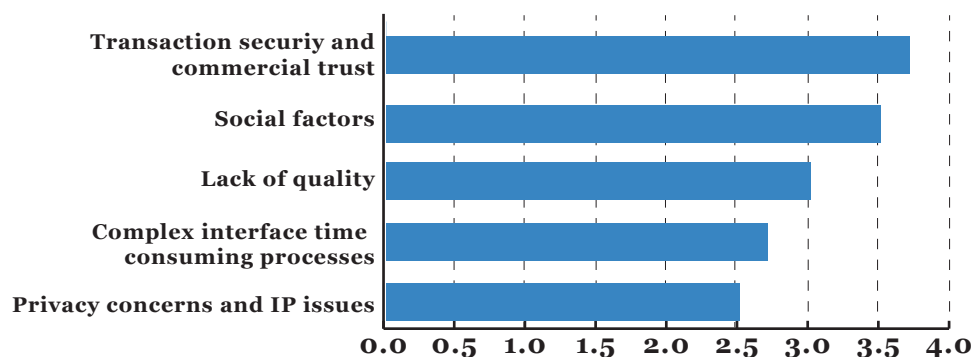
In this section the main factors that hinder Internet diffusion in Greece are explored in more detail, building on a series of interviews with local experts. This section represents the empirical part of this study. It tries to identify and explain the reasons for the slower than anticipated - at least at the beginning of this century – adoption rates. Our goal is to elaborate on the factors that prevent the wider use of the Internet.

Our literature review revealed the factors inhibiting the use of the Internet, which could be classified under the following five categories:

- Trust and transaction security
- Intellectual property rights and privacy issues
- Technological systems are not user friendly
- The limited number of reliable and high quality online services
- Social factors, such as knowledge of foreign languages, willingness and competence to use modern technologies and so on.

These factors represent both the demand and the supply side. In order to evaluate the importance of these factors, the research team ran an Internet poll. The respondents were individuals, business owners, and government officials of different professional and educational background mainly from the Attica region. Figure 2.1 illustrates the key findings in a scale from zero to four (zero for not affecting, four for factors affecting mostly).

Figure 2.1: Major factors hindering e-services diffusion (scale 0-4, ascending effect)



The findings suggest that the low adoption of Internet services and electronic commerce in Greece is attributed mainly to a) lack of trust and transaction security, b) social factors and c) low quality of the available electronic services. Users also expressed concerns regarding the complexity of the interface, as well as privacy and intellectual property issues, but to a smaller extent.

2.1 Transaction Security and Commercial Trust

■ Users are concerned about the security of their identity

There is a common fear regarding the theft/misuse of consumers' credit card information (as it is transmitted from their computer to the merchant's servers). Essentially, users are concerned that the security of their online transaction is poor and malicious parties may obtain a hold of their financial information. Experts agree that the risk is not any bigger than in the real world (e.g. transactions made by handing over your credit card to the cashier or the waiter in a restaurant).

■ Trust towards online business is poor

Some e-shops in Greece are poorly designed and provide conflicting or outdated information about what they offer. For example, a product at the physical store may have the same or even a lower price.⁵ Also, hidden costs (i.e. VAT not included, extra shipping costs, etc.) reinforce an environment of mistrust towards e-businesses. There are also cases when much lower prices act as a "fake" offer and refer to objects out of stock. The user, however, places the order (not being aware of the unavailability), and he then has to follow a complicated process to get a refund.

■ Anonymity increases the commercial risk from Internet fraud

Businesses run higher risks when they decide to sell online. These risks include fraud or damage issues (through malicious attacks, viruses and Trojans), unauthorized access to their accounts and erroneous information supplied by customers. Every transaction runs the risk of being classified as "CNP: Card Not Present", increasing significantly the chance of fraud that in most cases, the merchant can be held responsible for.

■ Electronic transaction systems provide unsatisfactory functionality to individuals and businesses

Electronic banking services are at the very core of the economic activity on the Internet. They provide the direct means (electronic payments and transactions) by which online businesses create wealth. Important steps towards the adoption of modern e-banking services have been taken by the majority of banks operating nationally. However, the level of quality in the existing services in Greece is still relatively low compared to the rest of Europe. Overall, the user interface provided by many e-banking solutions today is difficult for the average Internet user to comprehend, while the number of businesses using e-banking solutions is still small. The business functionality supported by these systems today is not efficient (long and frequent periods of down time for maintenance, no support for newer popular browsers, not standardized application interfaces). Stelios Tzivakis, CTO with Chryssi Eykairia provides the businesses perspective by stating that "[...] *There is no common operational standard adopted by all*

⁵ In many cases, lower prices found online are creating competitive conditions, even between products of the same brand. For example, according to a senior executive of e-commerce in Apivita, the company is selling both via a network of established shops and online. Because of the fact that the physical stores have seen a contraction in their turnover due to the clientele shift to e-commerce, there is a "price war" in order for the former to gain more market share and the latter to retain their sales.

e-banks, so the integration of business operations and support systems with multiple e-banking systems becomes an operational nightmare. If there was such a standard and furthermore a common technical specification, that would have led to a serious acceleration of e-commerce". E-banks today do not guarantee transactions against fraud (e.g. stolen or illegal use of credit cards), thus businesses are obliged to assume the risk of the online transactions, even if they do not have control over the authorization procedure.

2.2 Social Factors

■ Older people tend to speak only Greek while the younger individuals do not always feel comfortable using a foreign language

Language appears as a significant barrier for the wider use of Internet services in Greece, according to the Consumer Association INKA. Even though Greeks typically speak at least one foreign language (i.e. English or French) a significant portion of the population has issues when the service or the shop does not support the Greek language. For some types of services, even those who are more competent in a foreign language have difficulties to access services not available in Greek. For example, Coursera.com offers university courses at no cost for the online students, but following the courses requires a good knowledge of English, making it hard for many Greeks to participate.

■ Underdeveloped social and corporate culture towards electronic transactions and the Internet

Electronic transactions are not a part of the everyday life of the average Greek and there are several explanations for this: firstly, the use of plastic money (facilitating e-services adoption) was adopted at a slower rate, compared to the rest of the EU. Secondly, lack of responsible "Internet behavior" (e.g. not lying about their age when subscribing or logging in to a service) is evident among users, limiting the effect of policies and measures implemented to protect users of electronic sites and services (e.g. protecting minors from adult or violent content). On the supply side, some businesses use poor communication with their customers, provide limited details on pricing and shipping and are not able to guarantee a minimum level of service. Detailed documentation, clarity in procedures, OSS/BSS and efficient collaboration of different departments within the company are prerequisites for maintaining the high quality level of service.

■ The national education system does not provide the necessary e-skills for students, individuals and professionals

The efficient use of the Internet both professionally and personally requires the development of special e-skills. These skills consist of a proper mix of engineering, software design, marketing and business development competencies. The current setup of the national education does not necessarily provide those skills

to students. However, lack of e-skills is not solely a Greek issue. Ms. Neelie Kroes, Vice President of the European Commission, has recently stated that “...there will be a 700.000 shortage of e-skilled people in Europe by 2015”, indicating a skills gap that needs to be filled.

■ **Plans and initiatives of public agencies and organizations for promoting a creative Internet culture are fragmented and lack an institutional approach**

The European Commission supports the development of a healthy Internet culture among European citizens with most attention given to children, teenagers and young adults, via its Safer Internet framework program. SaferInternet.gr is the Greek Awareness Raising Centre, and it features a program, aiming at informing minors as well as their parents and teachers, about the user's responsibilities and rights in the use of the Internet. According to Veronica Samara, who leads the Greek Safer Internet Awareness Centre, educating the teachers has multiplier effects, since these concepts are conveyed to all pupils in schools. However, she notes that "the activities do not approach the matter institutionally and the success of the program is left to the willingness of the teachers to participate and relay the program's guidelines to their students".

■ **Unwillingness to use the Internet – a conscious decision by some Greek users**

The unwillingness to use new technologies is a basic characteristic among the “unwilling mass”, i.e. those who do not want to connect to the Internet today. The majority of them do so following a conscious decision.⁶

2.3 Lack of quality

■ **Public policies do not stimulate demand and private investments**

Significant funding has been allocated by the National Strategic Reference Framework (i.e. operational program Digital Convergence, action Digi-Content or similar) for stimulating demand, encouraging private investments and increasing the supply levels in the ICT market and the market of electronic services in particular. However, the majority of the services remain unused due to bureaucratic, time-consuming processes. There is also evidence that a significant percentage of the already allocated funds have been invested inefficiently (e.g. much of the ICT infrastructure of the public sector has not been used efficiently due to the lack of relevant procedures and the lack of advanced e-government services).

■ **Many public services are not strategically planned and hence rarely end-to-end**

Several online services of the Government authorities are not end-to-end. Many public payments usually require the intermediation of a bank institution, thus,



⁶ Tsatsou Panayiota (2012). *The Role of Social Culture in Internet Adoption in Greece: Unpacking “I Don’t Want to Use the Internet” and Frequency of Use. The Information Society: An International Journal*, 28:3, 174-188.

the citizens are obliged to physically visit the premises of a bank to complete the transaction. For example, tax statements can be submitted via the tax portal of the Greek government, but citizens may pay their tax only through a bank transfer (requiring either e-banking or a visit to a bank). Credit or debit cards are not allowed. In other cases, services that would significantly improve the operations level of the public sector have not been launched for administrative or other reasons (e.g. e-procurement), or were launched without proper preparation causing more troubles than they aim to solve (e.g. e-prescription). For similar reasons the integration of retail cash machines with the General Secretariat of Information Systems did not work as many merchants did not support the use of Forokarta, the ambitious plan of the Government to implement purchasing activity reports to prevent tax evasion. As a consequence, only a small fraction of the population and businesses use public services today. In 2011, only 45% of Greek Internet users completed transactions with the public sector via the Internet (e.g. submission of tax statements).

■ **The long-term costs to maintain high quality of service discourages local service providers from entering or staying in the market**

Creating a web site is the first and easiest part of the online business and most Greek firms have already taken this step. With or without the help of public subsidies, the cost for starting an Internet business is quite low since one can today set up an online business on virtual servers, offices and so on. Entrepreneurs, however, are faced with notable cost issues when running their services in the longer term, serving customers with updated content, guaranteeing quality of service and quality of experience, maintaining a good level of customer support etc. This is a much more expensive task than anticipated at first by many Internet entrepreneurs. The long-term consistency of a business is what differentiates it from the competition. For example, what distinguishes Amazon is not the selling of books and other consumer goods, but rather that it guarantees the quality of its products, the fast delivery and the smooth functionality of its online store.

■ **It is difficult to achieve economies of scale to support sustainable long-term operations**

Scale economies in the digital economy make the cost of serving an extra customer marginal, practically close to zero. In network economies, such as the Internet, as soon as a certain scale is achieved, businesses tend to grow exponentially by leveraging on-the-bandwagon effects of the market. Greece is a small peripheral market and it is difficult for entrepreneurs that focus only on the domestic market to scale their business, and thus efficiently compete in the long run. There are few notable cases of international expansion of Greek businesses (e.g. content aggregators, classifiers, tourism businesses, ticketing houses), but they are still few and largely go unnoticed by the mainstream press, so they do not motivate local entrepreneurs in that direction.

2.4 Intellectual Property and Privacy Issues

■ Businesses and entrepreneurs are concerned about the protection of their intellectual property rights

There are some cases where end users as well as businesses violate an entrepreneur's intellectual property rights. Some businesses, especially in the digital content industry, are highly concerned about protecting their rights. Taking such cases to court can be time consuming and expensive for many firms especially the smaller ones. An interviewed Greek content provider stated: "We've seen far too many businesses using the material of our web site for commercial purposes without paying us copyrights or even mentioning their sources. Prosecuting violators is simply beyond our financial means." The nature of the digital content business makes it hard for service providers to find an efficient business model that would protect both their intellectual property rights and the profitability of their businesses.

■ Users are concerned about the privacy of their Internet activity

Internet users are frequently concerned that their personal data might be released to third parties by online merchants and other service providers. In the same context, some users are concerned whether their personal information, submitted when accessing an online service, will remain private and whether the measures taken by online service providers for preventing hacking activity to their web sites are sufficient to protect their privacy. The media have the tendency to exaggerate incidents of electronic identity fraud and privacy. These reports amplify privacy concerns of users.

2.5 Complex interface and time consuming processes

■ Lack of a standardized interface

The deployment of complex electronic services, requiring the cooperation of more than one public authority and/or third party bodies, is sometimes inhibited due to the fact that some of the participants use proprietary products, which have no adequate interfaces for communication with other systems. The lack of a standardized interface to overcome these barriers can be significant.

■ Slow and sometimes unreliable connections

Sometimes, complex forms must be downloaded and large volumes of data must be exchanged. It has to be noted that large volumes of data are usually required for enterprises (in dealing with public e-services) rather than for individuals.



Internet opportunities for the Greek economy and society

Having identified and analyzed reasons for the slower diffusion of internet in Greece and before providing policy recommendations, we need to understand why it is important to improve adoption rates. With this chapter we want to illustrate how society and the economy can benefit from the internet. By using examples and cases and building on the available literature we try to explain that the benefits of the internet go beyond commercial gains for businesses and greater information for the customer.

We try to pinpoint what is the value added of doing things online rather than doing things offline. Internet creates new opportunities for economic growth, supports innovation and can boost efficiency and transparency. Even the environmental dimension should not be underestimated, since using the internet rather than traditional means of undertaking various transactions can translate into a lower environmental footprint.

Using the internet creates numerous new benefits and opportunities that the off-line world cannot offer. That is, they create additionalities in various socioeconomic activities that would not be feasible – at least at the same level of effectiveness – as in the online world. We pinpoint some of the most crucial ones, by classifying them under three basic pillars: Transparency, simplicity and accessibility.

3.1 Transparency

Customers obtain more information regarding future purchases

The usual information asymmetry between a buyer and a seller is smoothed out with the use of the Internet. The consumer can compare commercial and technical features of potential sellers (e.g. through e-tools such as skroutz.gr) and trace the best deal for her. In addition, more details regarding the seller's quality of service (through online comments written by other buyers) are available, thus minimizing the chances of dissatisfaction. The majority of the online auction sites feature a ranking system, where customers post their experiences, thus helping the rest of the online community with their future purchases.

Citizens' trust towards the institutions can improve with enhanced transparency and openness at governmental level.

Transparency and openness can be also enhanced at government level through the adoption of Internet services. An instance of this is the initiative "Cl@rity" (www.diavgeia.gov). The Greek ministries are obliged to upload their decisions on the Diavgeia's web site, with the exception of decisions that contain sensitive personal data and/or information that may jeopardize national security. Other platforms such as opengov.gr facilitate recruitment in the public sector and

public consultations with citizens and organizations (e.g. soliciting and receiving public opinion on draft legislation).

Use transparency as a marketing tool

Corporate actions can be easily communicated through the use of Internet and “real time reporting”. The wide variety of social networks allows companies to disseminate their corporate social responsibility reports. Also, some companies encourage their customers to provide feedback online. The feedback gives a better understanding of each firm’s operations and it usually works in more than one way. The firm understands the user requirements to ultimately increase the quality of supplied services and/or products. At the same time, best practices and achievements are communicated to customers and competitors, consequently increasing the demand and the international awareness of the brand.

3.2 Simplicity

E-procurement: Changing the way of doing business in the private and public sector

The application and deployment of a modern e-procurement system in the private sector is likely to yield significant benefits for entrepreneurs, such as supply chain integration and reduced employee overhead, as a consequence of improved speed, availability of information and supplier sourcing. For example, the implementation of e-procurement schemes in Australia in the middle of the previous decade seems to have created strategic benefits, leading to a reduction of operating costs and the final price of certain goods/services.

In addition, e-procurement solutions hold strong potential for the public sector. A well-designed electronic procurement system can reduce bureaucracy and the time spent on public tenders, improving public sector efficiency, a macroeconomic factor that stimulates growth at the national level.

Korea is a leading force in driving procurement online, having implemented a system that requires ongoing annual investment in the millions, but saves over \$6 billion for government agencies and participating suppliers. The system serves about \$50 billion in annual procurement activity. It enables efficient matching among over 41,000 registered public entities and 191,000 registered suppliers.⁷ Greek policymakers should allow online tendering, empower SMEs to bid, require transparency and encourage open standards and open source software in procurement to create infrastructure that others can build on.

Deal with public organizations efficiently

The bureaucracy involved in interacting with public organizations hinders entrepreneurship. Internet and especially new e-service concepts (like cloud computing - CC) can facilitate the launching of new firms and business entrepreneurship. For example, e-invoicing and e-payments help lift bureaucratic



⁷ Info collected from:

www.europarl.europa.eu/document/activities/cont/201207/20120710ATT48620/20120710ATT48620EN.pdf.

barriers between firms and public organizations and/or suppliers, leading to considerable cost savings.

One of the challenges for the Greek economy is to lay the groundwork for further investments, both by local and international actors. The existence of an integrated system of e-services, supported by a fast and reliable network of internet connections, could act as the core in rebuilding Greek entrepreneurship within a modern setup. All the available e-tools must be in place so that the potential investor can set up a new venture in Greece, regardless of his geographical proximity with the country.

3.3 Accessibility

Building the Cloud

Internet penetration can also improve accessibility to information and work. A typical example is Cloud Computing (CC). Cloud computing can be defined as computing in which dynamically scalable and often virtualized resources are provided as a service over the internet. What this practically means is that with the adoption of CC, we can access all our files and folders from any internet-connected computer, worldwide. CC offers strong benefits, especially for users that are mobile, increasing their productivity at minimum cost and effort

Text box 1: Successful cases of Cloud Computing

In the car manufacturing industry, the adoption of cloud computing leads to major money savings, since a company can rent time on virtual “supercomputers” far away from each firm’s headquarters, in order to conceive solutions to design issues. The case of the truckmaker Kenworth is illuminating: the company engineers managed to solve design flaws by using CC services, producing trucks that consume less petrol. Using modern technology (provided through CC services) they managed to reduce fuel consumption, leading to annual savings that exceeded \$400 per truck. The company therefore avoided investing in and installing expensive equipment.

Another example of successful of CC adoption comes from the Netherlands, where Annatommie, an orthopedic-diagnosis center, managed to increase its efficiency by almost 30% and achieve savings of more than \$30.000 annually.

Work from home – from collar workers to e-workers

Traditionally, working from home was considered suitable only for low-skill professionals, for tasks such as answering telephones, providing customer assistance, etc. Until recently, home-working was an option for businesses to cut

costs and transfer part of their operations to low-wage countries and employ foreigners that were able to serve customers over the telephone.

In the global economy, business is done internationally and the need to have all employees on site is becoming less crucial. Woody Leonhard, the senior editor at Windows Secrets Newsletter says “[...] work is becoming something you do, not a place you go to”. There is hardly a point of having to be in the driver’s seat for 2 or 3 hours daily if your work deals with collaborators and colleagues from everywhere in the world. More and more, international suppliers, retailers and software development firms advertise job posts that allow working remotely. Technology provides the necessary means for collaborating across cities, countries and continents. In an effort to harvest the best available talent in the world, forward-looking companies have long embraced teleworking practices. The institutional frameworks in several countries in Europe (like Luxemburg and the Netherlands) allow employees to ask tele-working for one or two days a week from home.

According to the Society for Human Resources Management in 2009, globally 52% of companies provided options for their employees to work remotely or to work away from the corporate premises for a number of days per week. The World at Work organization reports that 84% of the total US tele-workers did so one day of the week or more in 2010, up from 72% in 2008. The US tele-working population in 2010 was estimated at \$26.2 million, a figure corresponding to 20% of the total adult workforce in the country.

In the face of the current unprecedented socio-economic crisis, the option of working remotely provides serious employment opportunities for the many highly-skilled and experienced professionals in Greece. Already, many individuals that cannot be absorbed in the local job market are working for international companies from the comfort of their home office.



Text box 2: Smart Work Centers – The efficient way of working “almost” from home.

A very good example of teleworking comes from the Netherlands where a big software development firm has created so-called “Smart Work Centers” (SWC), an establishment for teleworkers around Amsterdam. Those facilities allow knowledge workers to operate close to their homes, while incorporating a number of services that optimize their working days, including not only high-end workstations and technology, but also other services like kindergardens, high quality catering, financial services etc. In this way, everyday commuting to and from the workplace is reduced without the risk of decreasing operating efficiency, because of in-home distractions (daycare, TV, pets and so on). The development of the concept led to the construction of more than 100 SWC in the Netherlands today.

Text box 3: Panagiotis Astithas – Working remotely for Mozilla Corporation

Panagiotis Astithas is a software engineer with a PhD from the National Technical University of Athens. Since the spring of 2011 he has worked at Mozilla Corporation. His work involves close collaboration with his colleagues from all over the world. He is a senior member of Mozilla's development team without ever leaving his home in Greece. Most of his team members work from home or remote offices and this has never been an obstacle in their day-to-day communications. The audio and video-conferencing technology nowadays is very accessible and quite effective. One of the things that stood out in his application to Mozilla was his involvement in the open-source community. According to Astithas *"[...] My work and collaboration with others in the open-source ecosystem, as well as being vocal in my blog, were some of the key points that attracted the attention of the company to my application. Through the open-source communities that operate in transparent ways, your work can affect people on the other side of the world, whom you have never met, and who at some point in the future may consider hiring you. References from previous employers are no longer as useful, as having your work out there for everyone to see"*.

Text box 4: ENOMIX – Tele-working

Enomix is a technology and telecommunications consulting firm that was established in 2011. The Internet is a core tool for employees and the associates of the company. The three partners / founders of the company live in Athens, Chania and Paros. Collaboration is inevitably supported by the use of Internet and cloud-based services. Enomix has no physical premises, nor servers nor a telephone center. The operational infrastructure of the company is supported by the Internet, cloud services and the use of open-source data and tools. The use of these services is not confined to the internal operation of the company - it expands to collaborating, communicating and serving its clients. Enomix's Internet-based configuration provides rapid and easy access to corporate and client data from anywhere in the world. It has dramatically reduced the transportation cost for the company, increased its productivity and has secured the awareness of a large Internet audience. After almost two years of operation, Enomix has minimal operational costs, provides excellent working environment for its associates and has established a culture of innovation and reputation in open software.

Satisfy the global appetite for local and original content

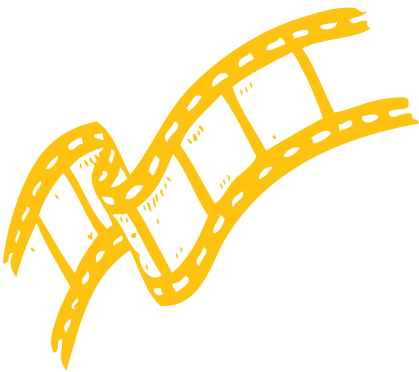
The Internet and the advances in digital technologies have provided tremendous convenience to consumers and small businesses to create and distribute high quality content. Anyone with an Internet connection has virtually unlimited ability to create its own content and services, to distribute them across the world and to compete practically with anyone. The costs to create and distribute content are the lowest the world has ever experienced and the exposure of a business on the internet is boundless. At the same time, however, the unauthorized replication, reproduction and distribution of content have also spread widely. The Internet has disrupted and revolutionized the way many professions operate, both due the efficiency gains it provides and the growing trend of unauthorized use of copyrighted material. The situation poses a threat for all involved in the content and service business, start-ups as well as industry incumbents. However, it also offers significant opportunities for both industry giants and local talents and entrepreneurs

Text box 5: Antonis Karalis – Music Producer

Antonis Karalis is a young music producer who leverages the internet for promoting and selling his work. He has been actively involved in online commerce since 2004 when he became the first Greek artist to upload and distribute his music via the iTunes USA Store. He has since used online platforms like iTunes, Google Play, Amazon and social media networks to promote, advertise and sell his music. According to Karalis, selling music records online is fundamentally different from what it was in the bricks and mortar economy. *“You have to share your work to let people find and appreciate it”* says Karalis, who believes that content creators need to engage and interact consistently with their audience and fans. When Karalis publishes his work on iTunes, he releases a representative section of the composition that people can listen to for free. If they like it they buy it. He has teamed up with Trey Ratcliff, a widely recognized photographer on the internet, with millions of active social media followers. Since 2010, his music compositions pad Trey’s photography, adventures, and video broadcasts that are disseminated to his numerous online fans.

Text box 6: Φουρφουράς.TV – Educational Television

Fourfouras is a remote small village in mountainous Crete, south of Rethymno. The village's primary school serves 7 nearby communities. In this region, the children of the school do not have access to resources and opportunities that other children may take for granted (e.g. piano, ballet, foreign languages). The school faculty, together with the local community, has made a formidable effort to customize the learning and study process to the particular geographical conditions of the school. Learning is highly participatory and involves a lot of outdoor engagement by and for the children. It is what Aggelos Patsias, who leads this initiative, calls "*Open school*". In the context of the initiative, the pupils at Fourfouras have created the Fourfouras TV. The children assume the role of a reporter and discuss things that they have learned and are of special interest to them. Their videos are posted on the school's blog, an exceptional form of educational television, and are watched by thousands of visitors. Besides conveying a closer view to the innovative teaching process endorsed by the local community, the blog serves as a window to the world for the pupils. Schools from other parts of the country already have expressed their sympathy and support for the school and plans for mutual visits are being prepared. The voices of the children of Fourfouras are not caged by geographical boundaries anymore. They are raised and spread to the rest of the world.



Text box 7: The case of the media industry

Internet has significantly altered the economics of the media industry as adding more material to an electronic publication costs practically nothing, whereas the same in a paper edition would be costly. Traditional newspapers that were once

leading the media pack are now challenged by volunteers and amateurs that blog about topics of personal interest, drawing the attention of their local and international community. Practically everyone can now become a “journalist” or reporter, since starting a blog requires merely signing up to a service and supplying a valid email address. The number of bloggers worldwide is increasing significantly by the day.

The challenges of the media industry are not related only to the increased availability of supply but also to some fundamental changes in demand. The demand for niche information, hands-on experience, and local insight grows dramatically and rapidly:

■ **People appreciate first hand experiences.** A policy analysis on the “Arab spring” by an analyst located in a European capital might be less informative than a blog with photos and opinions by a local activist, supporter or demonstrator. A local web blogger with photo footage and opinions from locals about the summer fires in the island of Chios might be more interesting than a report from an evening news correspondent. People **want to be informed about specialized topics**. Usually these are topics that local newspapers or other media are not able to cover. Learning how to clean your photographic lenses by yourself or how to repair your air condition unit is knowledge that you don’t find in your local press or magazines, or to do so you’d have to wait for a special issue to learn more.

In an abundance of information flows, the viewers or readers select their news or content supplier based mainly on the following two factors:

■ **Authenticity:** Authenticity plays a crucial role in the Internet world today. Anyone can write anything about any topic and can replicate or reproduce content from other sites. Replication of original content is a model that does not work well in the longer term. It may work for some time, but sooner or later the readers turn to the authentic source of information.

■ **Authority:** The accuracy and the level of analysis of the news reported by amateur bloggers and user communities are often surprising. There are bloggers that have built a name for themselves by reporting and commenting on developments in an honest and consistent manner.

The challenges for the media industry are great, because the notion that no one would find something of value for free electronically is no longer true. Forward-looking media houses partner with local content creators, reporters, journalists, bloggers and hobbyists to cover a growing range of interests. Newspapers understand the power of the user community and are increasingly willing to give to their subscribers or readers permission to comment on their articles and to challenge their journalists directly.

Access to capital - the concept of Crowdfunding

Only 2.3% of new businesses receive private financing from sources such as venture capital or angel investors, while the remaining 97.7% need to find other ways to raise capital (e.g. from family, friends and their community). Crowdfunding can be a solution for entrepreneurs to finance their own project, by tapping the crowd instead of specialized investors.

Platforms that help SMEs to gain the necessary capital raised a sum of nearly \$1.7 billion and successfully funded more than one million campaigns in 2011 (\$1.1 bn in North America; \$0.6bn in Europe and \$1k in other regions).

Text box 8: Kickstarter - Kicking off an innovative project through the web

Kickstarter is a website for funding creative projects (<http://www.kickstarter.com/>). A conceptual idea is described and uploaded at the website and then individuals and institutions pledge money for the project. Every project creator sets his/her own funding goal and time deadline. If people find the project attractive, they can pledge money to enable it. If the project succeeds in reaching its funding goal, the backers' credit cards are charged when the time expires. If not, no one is charged. Projects that apply for "pledging" include films, games, music, art and technology. Since April 2009, over \$350 million have been pledged by more than 2.5 million visitors.

Even though crowdfunding has been primarily used in the entertainment industry so far (music and cinema especially), there are a few initiatives undertaken recently in other industries such as journalism (Spot.Us), breweries (BeerBankroll where a pool of 5000 members pledged \$2.5 million) and software development (Blender Foundation or Trampoline Systems which received more than 1 million British pounds for financing the commercialization of their new software). Some entrepreneurs have raised on average around €150,000 through individual crowdfunding campaigns; the median value is however substantially lower, close to €6,400. Entrepreneurs start their crowdfunding campaign about 18 months after starting their business. More than 30% of entrepreneurs are from the United States while 55% of them come from Europe.

Challenging the state of things

Overall, Greece falls behind expectations and lags behind the European average in terms of internet adoption exhibiting strong barriers in both supply and demand:

- **Demand side barriers:** low confidence in the Internet by consumers, low penetration rates, restricted to “soft” usage - e.g. reading news, participating in social media networks etc.
- **Supply side barriers:** limited high-quality local content, e-government services, e-procurement services and e-commerce activity

Our research suggests that there is a need for developing a critical mass of high-quality online businesses, services and demand to foster a long-term relationship of trust and value between consumers and the online service and content providers. It is at that point that Internet will be as much appreciated in Greece as in most other European countries. When this critical mass is achieved, the use of electronic services would slope up with significant social and economic benefits for entrepreneurs, citizens and the public sector. We are still behind that tipping point but we are getting there, slowly.

This process is not automatic and actions in that direction are necessary, at various levels. In this section we provide recommendations for service providers and entrepreneurs, consumers and users, the public sector and policy makers. Due to the limited public funds, it is more likely to see the private sector driving the change and not the State. Nevertheless the role of the State is crucial in improving the relevant institutional framework and in creating the conditions for the mass diffusion of the Internet.

4.1 Recommendations for service providers and businesses

Stay focused on your online service offerings; make Internet a core element of your strategy: Service providers have significant responsibilities towards their customers. The entire process from order to delivery has to be carried out without physical contact with the customer. They have to issue the relevant delivery and payment vouchers without customer interaction. The terms and conditions of each transaction have to be well-defined and written transparently. Specific elements (e.g. costs or delivery details) have to be made clear to customers. Consistency, responsiveness and after-sales support of high quality are the core elements of success, irrespective of whether digital content or physical goods are on offer. Internet has to be thought of as integral part and not as a complement of the overall business strategy.

Summon critical consumer mass and scale fast: Businesses should try to gain a critical mass of consumers as swiftly as possible. This requires an innovative business model. It can happen via operational excellence and creative online

marketing. Marketing the products and services via social media networks increase tremendously and cost-effectively the reach of businesses. With nearly 60% of Greek users in social media networks, campaigns in social media networks can be highly effective. Also, firms must ensure that their business model is replicable and applicable to other countries and economies. Even when a product or service addresses a niche market, expanding the concept internationally can provide the scale economies for the service provider.

Address consumer concerns regarding privacy and security of online activity: The users will never stop worrying about the privacy protection of their online activity. Businesses should make sure that they offer a reliable and trustworthy service, by having implemented the appropriate software and functionality and by applying the necessary procedures to prevent interception and misuse of customer data.

Banks must prepare to meet the demand for advanced online banking services: The banking systems and other specialized tools will play the intermediate role between service providers, consumers and the banks. Advanced online banking should ensure availability and efficient circulation of money across online markets. There is plenty of room for innovation in the electronic transaction services to support advanced business models (e.g. consumer-to-consumer financial transactions, mobile money).

4.2 Recommendations for consumers and users

Protect your rights and respect your obligations: Becoming knowledgeable about user's obligations, rights and the power of influence in the online economy is a chief characteristic of the sophisticated use of the Internet. A well informed online user can prevent damage to himself and society by knowing how to act responsibly in the potential case of Internet fraud. Participating in online fora can help with the transfer of information, protecting the user, creating a critical mass of sophistication among the Internet community. The convenience [speed or scale?] that information is reaching end-users can create a powerful consumer movement that would reward good businesses and punish the bad ones.

Build your personal brand and participate actively in the online world: The great influence of the Internet and social media networks provides excellent opportunities for individuals to market their personal brands effectively in the online economy. Freelancers and micro businesses use social media and other available tools to brand themselves and their services/products. High quality user-generated content and disciplined and honest engagement in the online world are key success factors. The benefits from increasing the market's awareness of oneself and one's businesses seem virtually unlimited.

Leverage the online knowledge for personal and professional development: Internet is more than shopping online, reading news and



acquiring info from online encyclopedias. The greatest value for the user is not just the ability to compare products and services and make informed purchasing decisions. It is that the user has access to immense information from diverse sources that foster an integrated perspective of the world society and economy, for those who can filter and digest the information accordingly. Online engagement over blogs, web based fora, and social networks brings together people with diverse cultural and professional backgrounds but with similar interests. This brewing of people, apart from transfusion of ideas, inspires and encourages action and innovation.

4.3 Recommendations for the public sector

Restructure public policies to promote electronic businesses and entrepreneurship: The framework for subsidization of investments in the electronic services sector should take into consideration the special characteristics of small and medium sized enterprises (SMEs) that comprise the vast part of entrepreneurship in the country. Subsidies may not necessarily be as high as €20-€50,000. They can even be as modest as €5,000, touching upon a wider base of potential users and exhibiting a significantly higher multiplier effect. The conditions that are required by businesses to qualify for public subsidies must also be adjusted to fit the current needs of small and medium enterprises. In addition, the establishment of an institutional framework to promote entrepreneurship, minimize bureaucracy, increase transparency and improve the overall business environment is a fruitful recipe for the near future.

Raise the awareness of online opportunities and foster the development of a consistent Internet culture: Raising the awareness of the opportunities offered by e-commerce both for customers and firms is important to create a critical mass of demand and supply. Promotional campaigns and showcases about the uses and benefits of Internet services may also have multiplication effects. Organizations, agencies and other institutions that promote Internet-responsible use must be in the core of the public policy to improve Internet adoption. For example, the Digital School should be expanded, while activities relating to lifelong training processes - both formal and informal - as well as educational and vocational training opportunities should also be exploited.

Facilitate the development of high-speed broadband access networks: Due to the increasing concerns for the current level of the broadband infrastructure and its efficient use, public policies must aim at promoting investment in advanced broadband infrastructure and at increasing operational efficiency. Private investments should be accompanied with targeted public subsidies in the cases of market failures, so that the market players can benefit from new opportunities. The availability of advanced network access infrastructure, providing higher connection speeds, will most likely lower the connection cost per megabit for the customer, thus stimulating further supply and demand.

Launch useful services that work well and provide incentives for using e-government services: The state must launch integrated end-to-end public services.⁸ There is less service value for citizens if switching back and forth from electronic to traditional service is involved. Administrative burdens that delay procurement and the launch of services must be removed. The government should also adopt electronic payments to improve the satisfaction of the citizens. For example, the use of plastic money (such as credit and debit cards) for public payments must be facilitated. The introduction of the e-paravolo (e-voucher) is an alternative along this direction that can simulate effectively the traditional payment process. By developing useful services and using e-procurement programs, implementing innovative systems such as electronic issuing of invoices and a nationwide e-billing system, the Government could create a best practice that can promote the use of e-systems to both businesses and citizens. The setup of financial incentives for using e-government services should be explored. A payment discount when someone uses a credit or debit card to pay its dues to the state is worth looking into (the concept of discounts has already been used in the Greek taxing platform - TAXIS, since 2010). The Government must also promote public electronic services with the right marketing and branding strategy in order to be widely endorsed and eventually to become the norm.

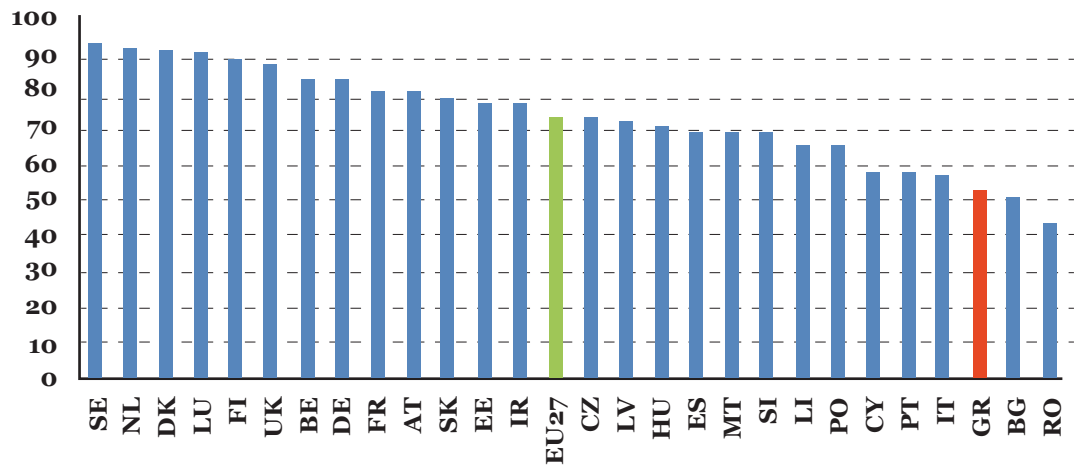
Assist people in developing advanced e-skills: People have shifted their interest to the Internet faster than they have developed their skills and capabilities. Bridging the digital gap among Internet users and between users and non-users is a challenge for current European policies. The implementation of relevant courses at all levels of education is a necessary condition for the creation of an advanced and highly skilled human capital in the country. From the labor market's perspective, there are fewer workers than jobs in the Internet business today, in contrast with other industries. The most popular e-skills are software development, computer science, electrical engineering and product management. The best fit for today's jobs is to combine a deep technical background with marketing skills. The universities should follow developments in the markets closely and offer the appropriate options to their students. By improving their curricula, the universities can also help improve the conditions for entrepreneurship and job creation in Greece.



Appendix

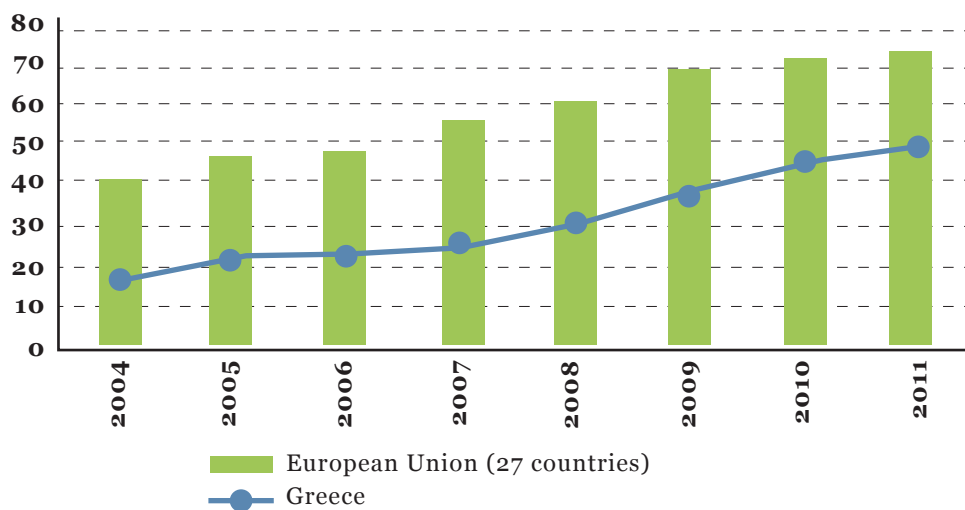
Various characteristics of Internet penetration and e-services use are presented further down. These figures refer to the most recent available data published by Eurostat and other reliable scientific sources.

Figure 1: Households with Internet connection, EU27, 2011



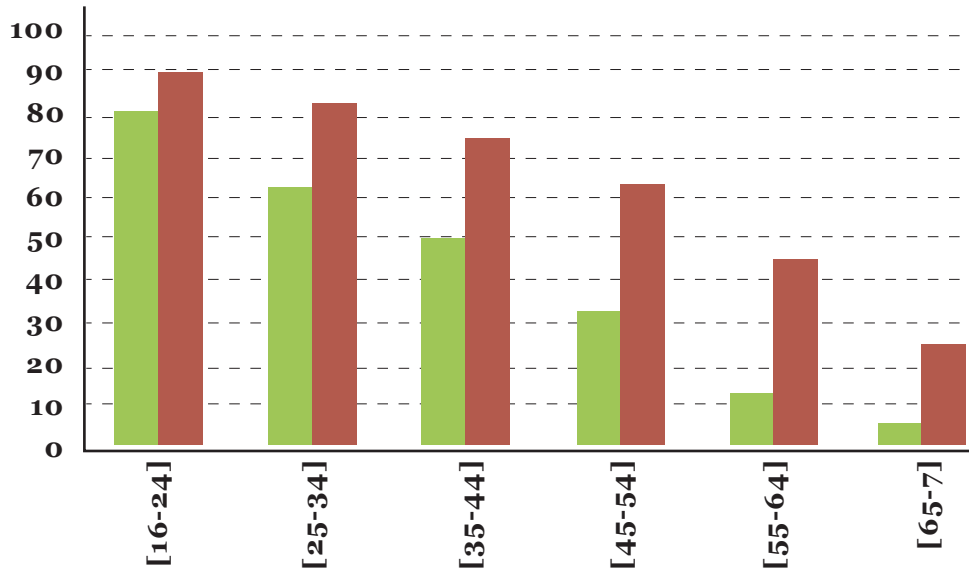
Source: Eurostat

Figure 2: Share of households connected to the Internet



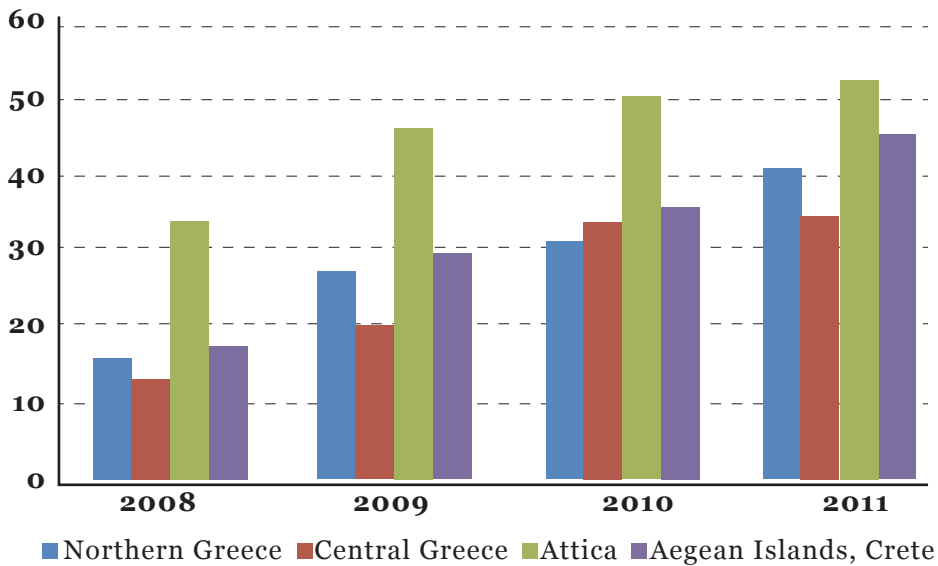
Source: Eurostat

Figure 3: Internet access by age group, individuals



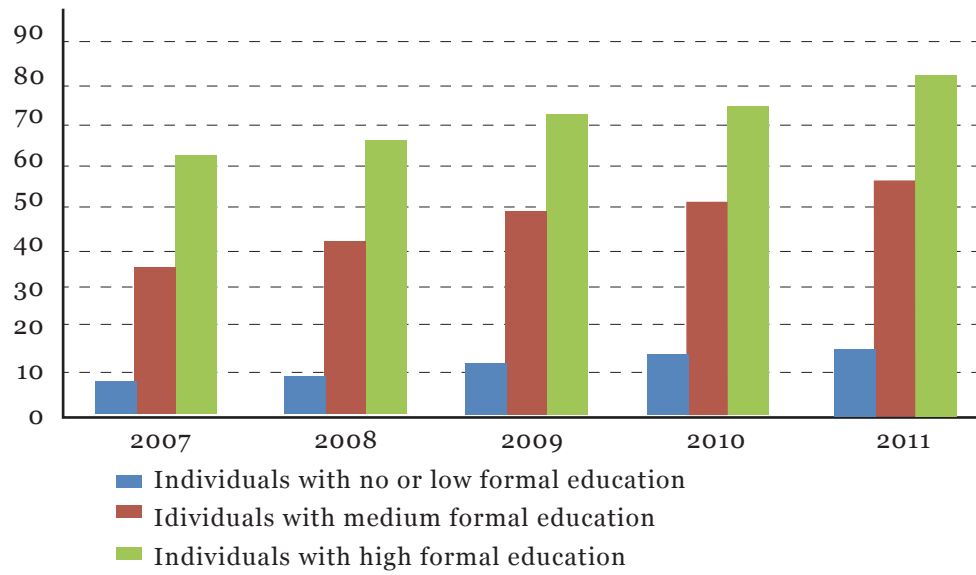
Source: Eurostat

Figure 4: Broadband penetration by NUTS 2 regions



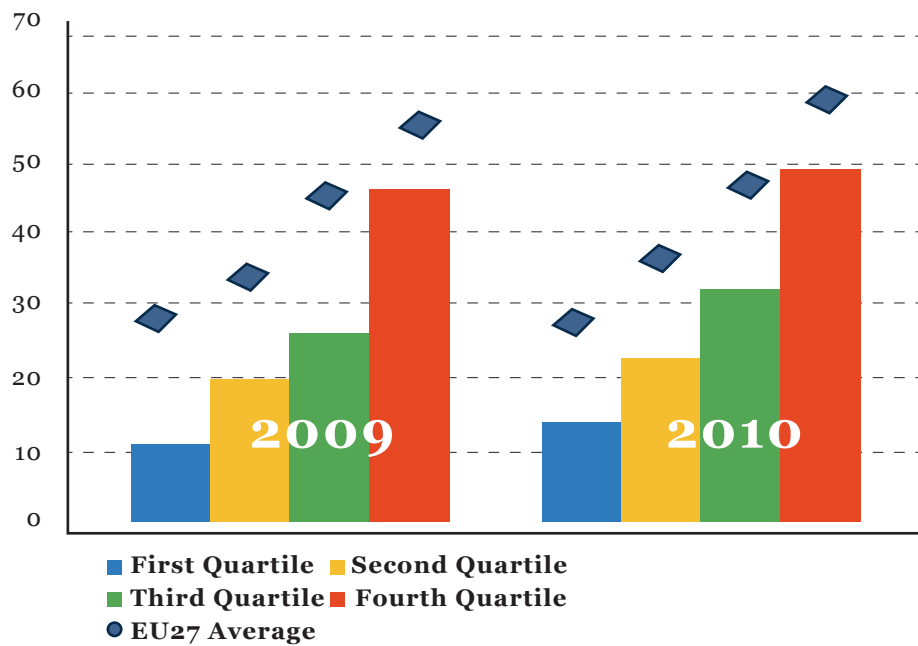
Source: Eurostat

Figure 5: Internet use by educational level



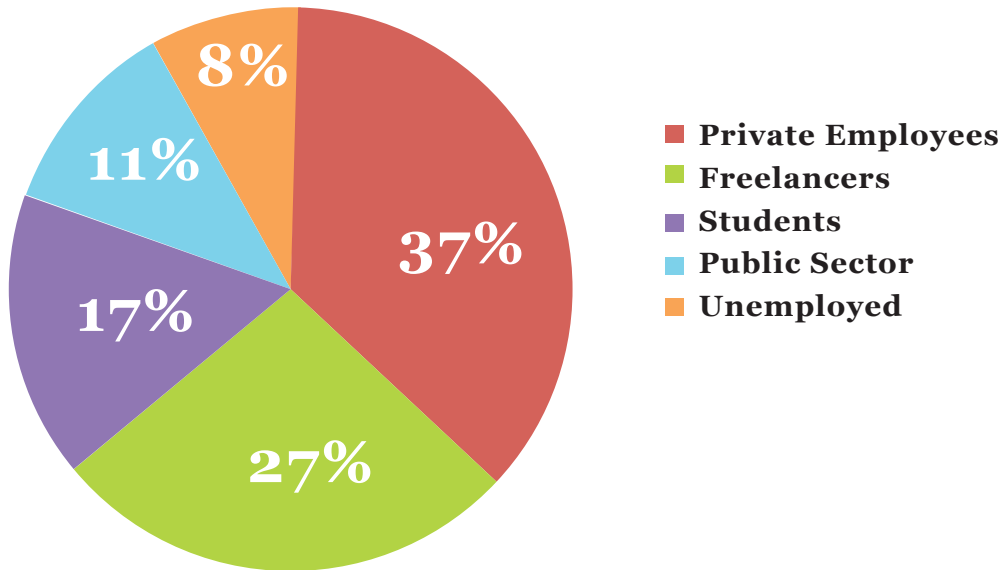
Source: Eurostat

Figure 5: Internet use by educational level



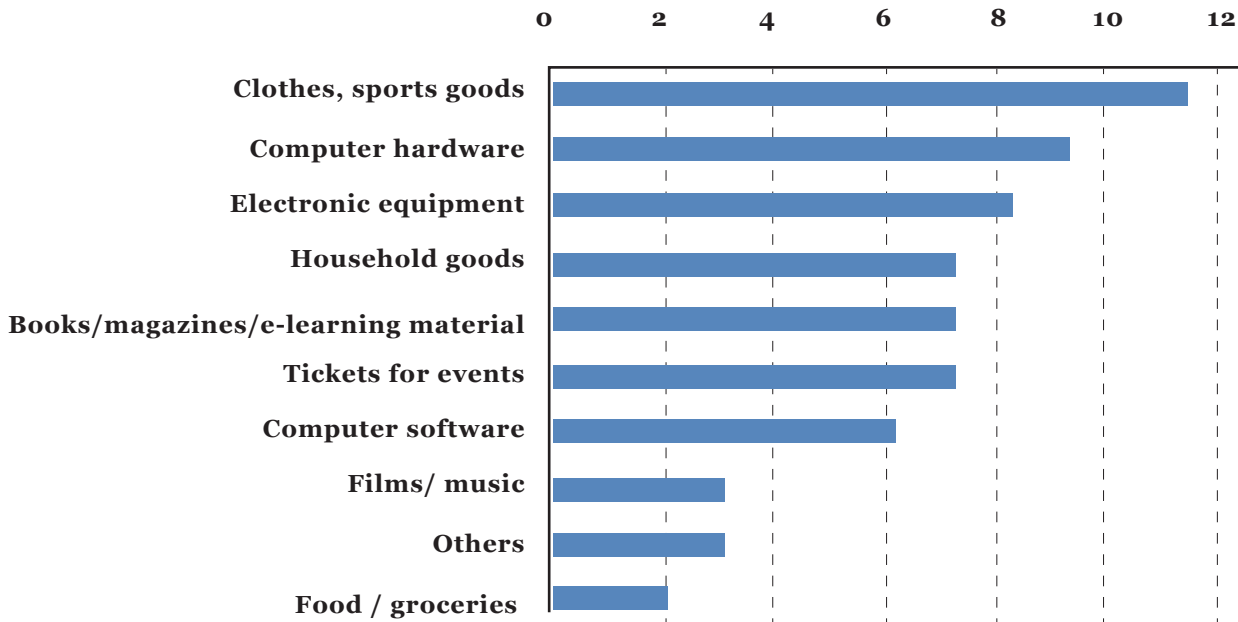
Source: Eurostat

Figure 7: Greek e-customers by professional status, 2011



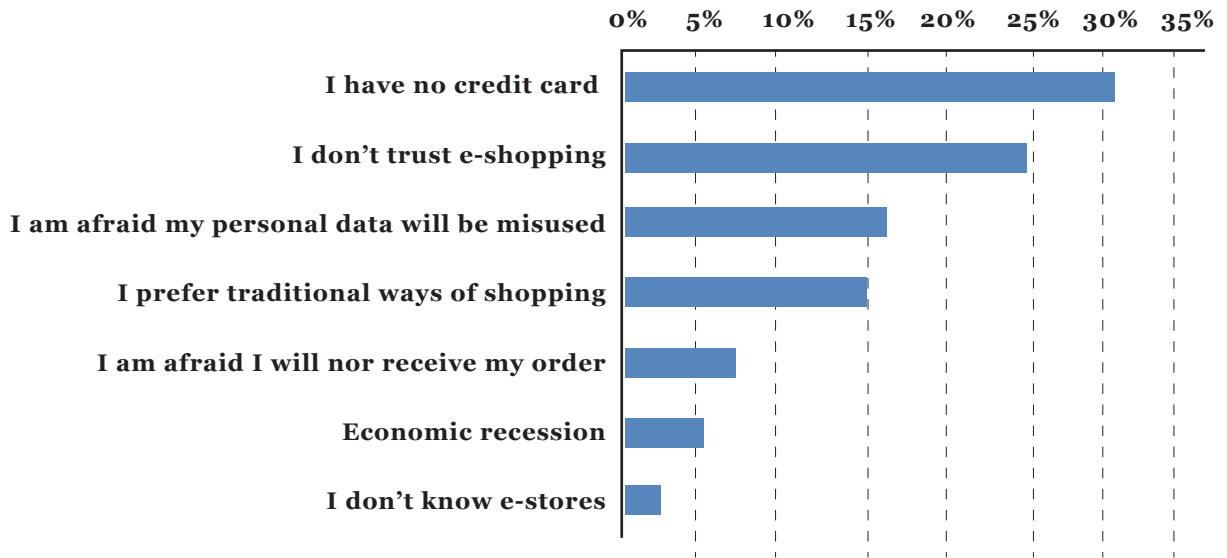
Source: ELTRUN

Figure 8: Internet purchase intent amongst Greek frequent users, 2011



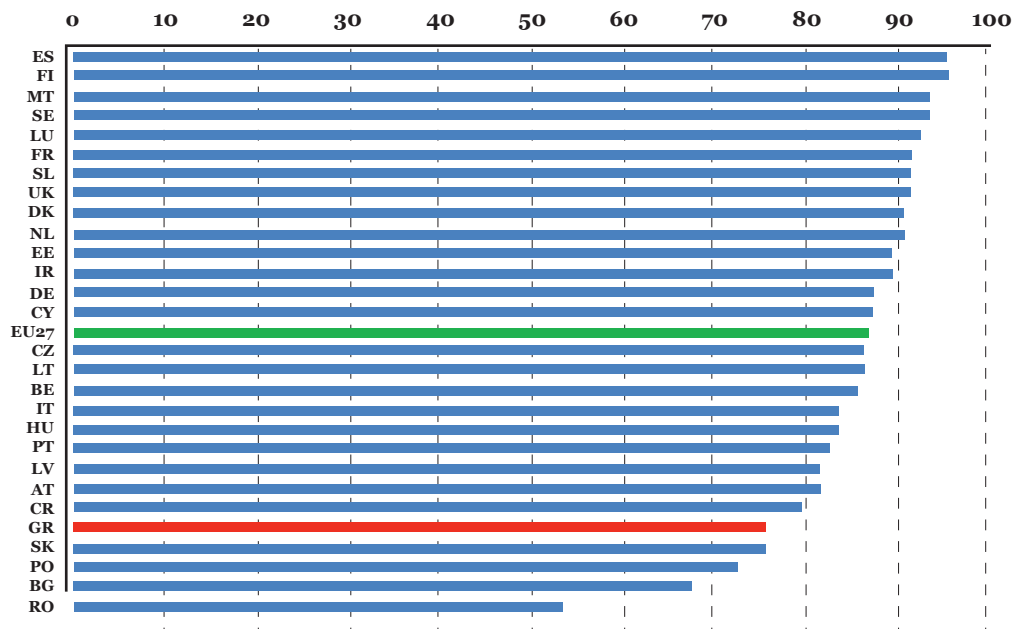
Source: Eurostat

Figure 9: Reasons for not using e-commerce services



Source: ELTRUN

Figure 10: Percentage of businesses with a fixed broadband connection, January 2011



Source: Eurostat

