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Learning paradigms through fundraising systems: The RoboBeggar and the InfoKiosk cases

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1. Introduction

It has become common practice for many organisations that need to raise funds for humanitarian aide and charity to utilise electronic fundraising systems to reach potential donors. These fundraising systems can be classified into those that are Internet-based (i.e. virtual and/or informative online systems) and those that are hardware with embedded operating systems (i.e. robots or Automatic Teller Machines (ATMs), with or without multimedia integrated systems). While the designers of fundraising systems are mostly concerned with the actual process of raising funds by these means, they tend to pay less (if any) attention to the impact that the learning behaviours and ethical convictions of donors support conscious and motivated donation. The fact that designers seldom take the value and function of user-centred designs and the dynamics of elearning into account in the fundraising system that they devise, stimulated the authors of this paper to explore a range of pertinent questions in the field of hardware embedded systems in educational technology. They have asked these questions in order to identify the interactive paradigms and rules that govern the effective design of elearning fundraising technology. The authors are all experienced in the application of elearning to human-machine interactions for the purpose of identifying those elements that best support the cognitive and learning processes of novice ICT users.

This chapter offers an analysis of the results that were obtained from four research projects that investigated two prototype computer embedded systems: the RoboBeggar (La Russa et al., 2005), a gynoid robot, and the avatar-assisted InfoKiosk (La Russa et al., 2008), a multimedia pillar kiosk (see Figure 1 below for a photograph of the two prototypes). The anthropomorphic robot and the pillar kiosk were analysed and assessed in terms of how efficiently they performed their tasks of interacting with human donors and potential donors, and the extent to which they were able to influence human behaviour in their favour. Both of these systems used elearning modules that allowed people who had decided

that they wish to make a donation, to make direct money transfers to the charity concerned by simply using their bankcards. This chapter compares the elearning methods of the two systems with the cognitive and learning processes of those who used the systems to make donations. This chapter also examines and analyzes the objective and subjective data (including user feedback) that the researchers collected from all the test cases.

Fig. 1. The RoboBeggar (left) and the InfoKiosk (right) – terminals of the two fundraising systems used for automated computer-based fundraising discussed in this paper

The efficacy of the fundraising systems that form the basis of the human-machine interactions are then assessed by the researchers on the basis of the data thus analyzed. A set of design guidelines has been specified in this chapter for the use of software programmers and engineers, anthropomorphic robot developers and fundraising organizations in order to serve as a basis for the design and development of effective elearning interactive fundraising systems (anthropomorphic robots or simple computer-embedded systems). The design of robotic or computer embedded elearning fundraising systems' programs can benefit from a structured and methodical approach that takes into account the design flexibility that is provided by these two presented prototype cases. Because the researchers adopted a Object Oriented Design (OOD) and Object Oriented Programming (OOP) to approach these problems, it was possible for them to redefine both of the two systems' program modules on the basis of user feedback and the interactions that took place between users and the hardware (related metadata was also provided by each system's software). The adaptability and flexibility of the programs that constituted the operational base for

these two systems enabled the researchers quickly to incorporate the data that emerged from the learning processes of frequent users, thus enabling them to refine the systems until they operated with maximum efficiency.

By using newly emergent data, it quickly became evident to the researchers that donors clearly preferred to use and interact with the InfoKiosk in church environments rather than the RoboBeggar. This was vitally important information because it was already known that the RoboBeggar was the more noticeable and visible instrument for donation collection in other (non-church) environments. It might therefore have been logical to suppose that the RoboBeggar would also attract more attention and donations in ecclesiastical environments. But, for some reason, the opposite was true. This chapter presents and discusses the reasons and motivations for the positive and negative impacts made by different systems in different environments. The conclusions that were drawn from this data served as a basis for constructing a set of design guidelines for the designers of interactive elearning fundraising systems.

2. Fundraising in the third sector

During the past few decades, marketing and communication specialists have paid an increasing amount of attention to the possibilities inherent in fundraising by means of the systems mentioned above. At the heart of this activity have been attempts to define reliable criteria for soliciting strategies (Hart et al., 2005; Patterson & Radtke, 2009). During this same period, a large number of field studies and reports have been sponsored by fundraising organisations and other interested parties in the hope of identifying the conditions that promote or hinder fundraising activities, as well as related trends, needs and sector investments, and the expectations and expenditures that define this field of research (RNID a, 2008).

The amounts that are collected by fundraising organisations vary for each country. According The Charity Commission of England (Facts & Figures, 2009), the annual growth rate in fundraising between September 2008 and March 2009 was 6.8%, and although this figure has been showing a tendency to decrease, it is still in keeping with the total amount of money (UK£ 49.943 billion) collected throughout the world by 168,500 charitable and humanitarian organisations by 31 March 2009 (the cut-off date for this data). According to *Giving USA* (Bond, 2009), donations in the United States in 2008 reached a total of US$ 307.65 billion (a drop of 2% from the total amount collected in the previous year). The use of mobile phones for fundraising (which is called *mobile fundraising*) in the United States has also started to produce good results, with the total amount of about $500,000 thus. Although this figure is still far lower than the amount collected by more traditional methods of donation solicitation, it nevertheless represents 0.0016% of the total amount that was donated as a result of formal fundraising activities in the United States in 2007 and 2008 (Hiley, 2009). In order to obtain an accurate understanding of how vast the amounts are that are accumulated in the United States as a result of fundraising activities, it is enough to mention that the amount collected as a direct result of fundraising activities collectively constituted 2.3% of the Gross Domestic Product (GDP) in 2007, and is expected to represent 2.2% of the GDP in 2008 (Bond, 2009). Because it is possible to raise large amounts of money by means of fundraising, many organisations organise fundraising training courses to teach and train personnel in this activity (Murray, 2009). This is still happening in spite of an

increase in recent years in the number of management problems experienced by fundraising organisations with regard to their reserves policies and the degree of transparency with which they operate (Ainsworth, 2008).

It is worth noting that the use of "cold" door-to-door fundraising techniques is still widely used by many organisations, and, according to the Public Fundraising Regulatory Association (PFRA), this method of fundraising can still produce excellent results (Lake a, 2009; Lake b, 2008; Jordan, 2009). Ironically, it is the continued use of this traditional door-to-door technique (which is regarded as a tried-and-tested method that delivers good results) that accounts for the less-than-expected amount of interest in Internet fundraising methods, and various other online and offline techniques (Lake c, 2009).

2.1 The needs of the fundraising sector: money – but not only money

The needs of the fundraising sector cannot be comprehended only in terms of the ultimate purposes of the fundraising or the means that are used to pursue fund solicitation. The very nature of the fundraising organisations themselves and the degree of efficiency with which they operate, are also matters of great concern to these organisations. Most fundraising and non-profit organisations tend to use their own resources and expertise to reach potential donors, and they base their strategies mainly on their own past successes and failures. Because past successes dictate future methods for most fundraisers, they tend to keep approaching the same donors and to stick to the same methods of soliciting – thereby forfeiting whatever opportunities for improvements, expansion and increased efficiency that are currently offered by more advanced technological systems (Hart et al., 2005) and the advice of experts in this field (Patterson & Radtke, 2009). Studies have even shown that some organisations forfeit the advantages that could accrue to them from the publication of budgets and annual reports. Such reports and information are valuable because they increase transparency and trustworthiness by providing certified information about operations and plans for future strategy planning (Ainsworth, 2008).

While it is impossible to quantify exactly the total amount of money that is needed by non-profit organisations that intervene in critical situations and ameliorate a variety of urgent problems in the fields of health, social services, culture, law, politics, humanitarian aid, philanthropy, religion and the environment (Simon, 1995), it is nevertheless possible to define how much capital has been expended and to what extent the annual amounts that had been raised have diminished from year to year (see Bond, 2009). Reductions in amounts raised from year to year place an enormous strain on non-profit organisations and make it very difficult for them to maintain the quality and scope of their operations from one year to the next with fewer resources. It is interesting to note that annual reductions in the amount of money collected through fundraising affect mainly the e-fundraising sector (electronic fundraising that is based on Internet services or mobile systems). These (electronic) forms of fundraising have suffered far more from reductions in expected targets during the last two years than have traditional face-to-face (or door-to-door) fundraising methods. It has been hypothesized that face-to-face fundraising methods have been far more effective in raising more funds for their organisations because of their consistent investment in the training and preparation of volunteer fundraisers (Jordan, 2009).

In 2003, the United Nations (UN a, 2003) published guidelines that recommended certain standards and norms for the development and publication of data emanating from non-profit organisations. This report includes recommendations about the necessity for detailed

data about non-profit organisations, their activities and how volunteer activity should be divided to reflect national components. Although the data in this handbook is over a decade old, it nevertheless offers essential insights into the way in which voluntary work should be organised. In the years between 1995 and 1997 in Finland, the percentage of the population that made voluntary donations was 33%. The average for the European Union was 32%, and the average for the United States of America was 49% of the population (UN b, 2003).

Experts and analysts in this field agree that non-profit organisations have been aggressively positioning themselves in commercial settings (Weisbrod, 2000) because the benefits that might accrue to them from doing this have not escaped their notice. The advantages of being present and active in commercial environments and the benefits that can accrue to fundraising organisations from transforming themselves from non-profit organisations into profit-making organisations that function in competition with traditional businesses and shops, have now been widely accepted (ThirdSector, 2009). It remains to be seen whether fundraising will continue to remain at the high levels achieved in previous years by non-profit organisations once they become thoroughly commercialised and so possibly less deserving of support in the eyes of their established donors.

The administrative costs and the costs of promoting and expanding fundraising activities can exert a decisive effect on the organisational structure of fundraising organisations. The running costs of very large non-profit organisations in the United Kingdom vary from between 23% and 25% of their total income (Unicef UK, 2009; RNID b, 2008), while the equivalent amount for similar fundraising organisations in the United States is about 18% (Bradley et al., 2003). According to Bradley et al., the administrative and running costs of fundraising organisations could be reduced by 5-10%, with an equivalence in total savings for all such organisations of up to $100bn. The debate on how to effect savings is certainly not yet over. There is, for example, ample scope for internal structural reforms to their systems that many organisations could carry out without any outside assistance, that would substantially reduce costs and increase efficiency.

Finally, according the report entitled *Toward a New Asian Development Bank in a New Asia* from the Asian Development Bank (Panitchpakdi et al., 2007), 90% percent of the population in countries that are now reasonably stable will experience widespread *severe* poverty by 2020. This report is a warning to donors to prepare themselves for the advent of these conditions. The United Nations report entitled *The Millennium Development Goals Report 2008* (UN, 2008) emphasises that the fight against poverty in developing countries will require not only political will and determination but also *adequate funding* in the long run. While this United Nations report emphasises that both private and non-governmental organisations play a crucial role in a campaign against poverty, it also recognises that the actual amounts currently being collected are still inadequate for the purposes for which they are needed.

The revenue collected by fundraising organisations has to be adequate to finance the following activities, processes and assets:

1)   Logistics
2)   Administration
3)   Technology
4)   Personnel training
5)   Budgeting
6)   Investment goals

Our interests for the purposes of this paper and for future research are centred mainly on **technology** (the need to devise and develop additional forms of fundraising technology that will empower the work of fundraisers) and **investment goals** (the need to support current modes of fundraising by integrating them with various tried-and-tested procedures of elearning).

2.2 The need for fundraising: Some global reference figures

According the United Nations publication entitled *The Millennium Development Goals Report 2008* (UN c, 2008), there were last year (2008) a total number of 42 million displaced people throughout the world whose lives had been disrupted by various kinds of conflict and persecution. The United Nations itself was active in caring for 16 million of these refugees. When one examines what this publication as to say about the employment rates from various regions of the world, the following figures emerge: in the developing regions of North Africa, Western Asia and Southern Asia, the employed female population stands at only 22%, 25% and 34% respectively, as against the male employment rate of 70% (for the countries of North Africa and Western Asia), and 78% (for the countries of Southern Asia). These figures make it clear that the employment ratio of females in these regions is, on average, over 40 points lower than that of men in the same countries, while there is, on average, a difference of 20 points between male and female employment rates if one combines the figures for the remaining developing regions. The report notes that the creation of works that are specifically reserved for women and that are supported by local existing institutions would increase the employment rate of women and that this would enable these women to meet their family responsibilities more effectively than they do at present.

One in five of the workers from developing countries currently lives in extreme poverty because of low salaries and because about half of the jobs they have are temporary, ad hoc, transitory, frequently exploitative, and without guarantees or state regulation of any kind. When one analyses what the report has to say about nutrition, one notices that the number of undernourished children under the age of five has dropped from 33% (in 1990) to 26% (in 2006). This figure of 26% corresponds to over 140 million children (UN c, 2008).

Education in developing countries is also affected by poverty. The United Nations report mentioned above (UN c, 2008) shows that only 65% of children from the poorest strata in society in the countries surveyed had ever attended primary school as opposed to 88% of those from the richest strata of the populations concerned. In addition, a total of 84% of children in urban areas attended a primary school while only 74% attended such a school in rural areas. Even in refugee camps, only 6 out of 10 children are enrolled for primary education. In developed countries in 2006, primary school enrolment rates for girls was equal to that for boys (namely, 100% for both genders), while in developing countries the rate was 94 for each 100 boys who were enrolled (UN c, 2008).

While the mortality rate for children under five was 0.6% in developed countries, it was 8% in developing countries (UN c, 2008). Of the 500,000 women who died in 2005 (UN c, 2008), childbirth or in the six weeks following delivery, 95% of these deaths occurred in developing countries. While the number of women who die from complications incurred during pregnancy in developed countries is 1 out of every 7,300, the equivalent fatality rate in the sub-Saharan region (the developing region with the most fatalities during pregnancy and delivery), is 1 out of every 22 women. But what is of greatest concern for those who

campaign for the treatment of HIV/AIDS patients, the proportion of population in developing countries who needed HIV retroviral therapy in 2007 was 31% while the equivalent figure was 22% in 2006 (UN c, 2008). These figures speak for themselves.

2.3 Learning in fundraising

The data and information provided by fundraising organisations together with available reports and reviews of their activities, indicate that such organisations are becoming more and more aware of the importance of motivating donors so that they will be willing to at least maintain the level of their past donations, even in the unfavourable economic climate that is currently afflicting the world. On the one hand, it is necessary for organisations to focus on the public perception of the charitable or humanitarian work that they undertake as well as on their status as reliable and trustworthy organisations, so that they will be in a strong position to continue soliciting funds from donors (Simon, 1995). On the other hand, it is vital to reinforce the perception of donors that it is their contributions that enable the recipient organisations to continue with the implementation of their humanitarian activities. It is this perception on the part of donors that motivates them to continue making donations from one year to the next (Huang et al., 1995; Ajzen, 1991). The more donors can be made to feel that they are playing a vital part in the maintenance of the organisation to which they contribute and in the realisation of its goals, the more likely they will be to continue to support the organisation as long-term, stable donors. Research has indicated that if current donors are given informative, periodic information in a suitable format about the progress, achievements, hopes and intentions of the recipient organisations, they will be more likely to continue their support in the future (Ajzen, 2006). It is the purpose of this paper to point out that fundraising organisations can maximise their donations by using appropriate methods of solicitation if they implement those learning principles that have been proved to be effective in motivating people either to become donors or to continue making donations to those fundraising organisations that they have supported in the past.

Most fundraising organisations have well-established procedures for reinforcing favourable donor behaviour on the part of their benefactors or on the part of potential donors. These procedures vary according to whether donations are solicited on the Internet or as a result of personal, face-to-face solicitation activities. It has already been established that the potential for reinforcing favourable learning behaviour on the part of donors or potential donors is far more effective when the solicitation is made online. The reason for this is that information that is entered online can be processed for more quickly than information obtained from donors who are making donations as a result of a personal, face-to-face encounter.

2.3.1 Differences in motivational potential in online and face-to-face fundraising

Most of the major fundraising organisations that operate online (such as, for example, the RedCross, 2009; UNHCR, 2009; Unicef, 2009; GivingUS, 2009; UICC, 2009; MSF, 2009) seek to reinforce favourable donor attitudes by providing their donors with carefully selected descriptions, figures and statistics at summarise their achievements and their future goals and needs. In some cases (such as those in FELM, 2009 and Unicef CH, 2009), graphics and animated interfaces are utilised to reinforce the benevolent intentions of current donors and motivate potential donors to become permanent benefactors of the organisation. But even when the quality of information is as sophisticated as this, the organisations concerned are

still not benefiting from the kind of immediate feedback on donor behaviour and preferences and the various modes of interactivity that have been shown to be extremely effective in motivating current and potential donor behaviour. In most cases in which donation data is collected and meticulously processed before it is passed on to current and potential donors, no (or minimal) emphasis is placed on determining and responding to the personal preferences and wishes of donors.

The proper utilisation of certain human factors is fundamental in effective face-to-face fundraising. In many cases, it would seem to be is more effective to invest in the training of skilled human donation solicitors rather than to rely on the undoubtedly positive effects of proven online learning strategies – while both of these methods produce far better results than the kind of traditional solicitation methods that rely on standardised brochures or regressed in people to commit themselves to future donations by means of their signatures on a pledge.

Research conducted by Lake (2008b) and Jordan (2009) has demonstrated that face-to-face solicitation of donations is more effective than solicitation by means of online approaches in times of economic recession such as that which currently holds the world in its grip. This has been attributed to the value that donors place on the human interactions that they experience, as well as on the greater availability of volunteers and the ability of human donors to adapt their approaches during the interactive process. It is evident that the "human touch" is highly effective in augmenting the provision of data and information that is offered to potential donors in pamphlets, brochures and other kinds of publicity material. It has been hypothesised that online systems are not less effective because of the computer illiteracy of potential donors or their inability to grasp the significance of the information that they receive, but because the absence of immediate human contact, interactivity and the warmth of face-to-face encounters diminishes the impact of the information that is offered by soliciting organisations. Even though most fundraising organisations have long been aware that they have not yet maximised the potential of their donors (i.e. the amounts that individual donors would be willing to contribute under different circumstances), they had no idea about what they should do to remedy the situation. There are a number of academic studies (such as those of Thorme & Root, 2002; Pritchett, 2002; Mondi et at., 2007) that demonstrate (1) how motivation is closely related to learning, and (2) how goals that are relevant to the interests and concerns of learners, improve the quality of learning behaviour.

3. Existing technologies that promote fundraising goals

Many countries support the fundraising efforts of non-profit organisations by making direct contributions to their budgets or by creating tax-related mechanisms for those who wish to donate funds to an organisation of their choice. In some countries, for example, individuals and corporations are encouraged to indicate their desire to support particular non-profit organisations. Their government then makes a *pro rata* donation from their tax to the organisations concerned. Apart from the well-known formats of face-to-face and mail-dependent solicitation systems (even though the latter have proved to be expensive, ineffectual, cost-inefficient and repellent to potential donors), more and more fundraisers are making use of a variety of e-fundraising methods. Existing e-fundraising methods (according to BlackBaud, 2009; Kipnis, 2009; Andresen & Mann, 2007) can be categorized (for the purposes of this study) into those that are:

1.   media-based
2.   Internet-based
3.   sponsor-supported
4.   telephone-based

In the section that follows, the technology utilised by each of these methods will be described in turn.

3.1 Descriptions of the technology utilised by each of the above-mentioned methods

3.1.1 Media-based technology

Medi- based technology uses mainly radio and television programmes or inserts. While the fundraising organisations themselves usually pay the cost of transmitting the programmes concerned, many radio and television channels offer a certain amount of free broadcasting time to approved organisations. The audio and audio-visual programmes and inserts (most of which are short commercials that appeal for donations with which to fund the activities of the group) are professionally designed and produced in order to make the best possible impact on potential donors. These appeals for donations have come to be known as *aid solicitations,* and they are inserted into particular kinds of programmes in order to achieve the greatest possible impact. Agencies of governments will also, in some countries, offer various kinds of assistance in order to achieve an optimal distribution of these solicitations. Occasionally, humanitarian organisations will utilise CDs or DVDs to get their message across to the public because these options are less expensive than straightforward advertisements that are inserted into scheduled programmes.

3.1.2 The Internet

Internet-based methods for soliciting donations tend to use the following three main methods of attracting voluntary workers and accumulating capital:
(1)   They appeal for online donations.
(2)   They offer online subscriptions that entitle respondents to membership of an organisation, a periodic newsletter and active support from the organisation for a specific length of time.
(3)   They appeal for committed individuals who will be prepared to donate specific, regular amounts that will help the organisation to get its head above water in times of unforeseen need or crisis.
While many Internet-based systems are frequently simply a kind of electronic carbon-copy of what appears in the organisations' journals, they also are able to include far more data than can be contained in journals. The Internet-based format includes articles, fundraising figures, pictures and photographs, online videos, statistical graphical data that indicates the extent to which goals of the organisation are being achieved, and links to other relevant websites. They also offer secure access to donation pages and the opportunity to leave messages and comments. In some cases, organisations offer small gifts in exchange for donations. Donors thus receive small but useful gadgets or other desirable objects as an expression of thanks for their generosity. This exchange of symbolic gifts for donations has been found to be effective because it increases the sense of relationship that donors have with the organisation to which they have contributed.

3.1.3 Sponsor-supported methods

Sponsor-supported methods are usually embodied in the following two forms: (1) Hidden support methods. These methods are not necessarily hidden from view (although they can be at the discretion of the owner of the media or the sponsor of the provider). They are based on the calculation of a percentage of the commercial profits that devolve to the fundraising organisations involved. (2) Expressed support methods. In these cases, the commercial or legal entity aims at achieving a synergy between its own online products and the fundraising organisation concerned.

3.1.4 The *telephone based* soliciting.

Telephone-based soliciting has recently been opposed by a number of consumer organisations, and seems to be falling gradually out of favour. Telephone contact is nevertheless still used for making direct contact with potential and actual donors, and also for gently reminding established donors that their donations might be overdue. Telephone surveys are also used for investigating specific problems, and for attempting to gauge (by means of Gallup poll-type surveys) the kind of future support that an organisation might expect as they engage in strategic planning. According a recent survey (Harvey, 2009), telephone soliciting is the third-least cost efficient method for soliciting donations, ahead of the direct mail method and the use of newspaper advertisements.

3.2 How these forms of technology are used in fundraising campaigns

Large and well-established fundraising organisations (such as UNICEF and the Red Cross), that are already well known to the majority of the public, find it easier on the whole to use various forms of media technology and to benefit from their uses. Such organisations are supported by large numbers of established donors because the range of the operations is far wider than those of smaller, local organisations. But these smaller organisations can make effective use of local media and online programs to generate support for the causes.

While the Internet is widely used by all fundraising organisations in developed countries, the quality of their services and the methods that are used on websites do not vary much in proportion to the size of the soliciting organisation. All organisations – whether large or small – tend to approach their clients in the same way. Their websites offer online opportunities for donors to make contributions, to subscribe to membership of the organisation, and to recruit volunteers who are freely willing to serve the organisation in whatever capacities the organisation needs (Kipnis, 2009). Nowadays it is usually only small- and medium sized fundraising organisations that make use of the telephone for direct soliciting, and then only rarely. Because so many of these small- and medium-sized have been disappointed by the amount of money that they are able to raise by using technology- and Internet-based appeals, they are turning more and more to face-to-face methods of soliciting without actually closing down their online solicitations sites.

3.3 The failure to apply research findings to online learning processes

The methods that fundraisers use to condition their donors by applying what is known about human learning and conditioning processes are very similar to those used by non-fundraising organisations. The commercialisation of the media throughout the world has exerted a strong influence on the methods selected by non-profit-making organisations to

achieve their aims. These organisations use tried-and-tested techniques on their websites to attract the attention and cooperation of potential donors by combining statistical data with images, text, video and other online methods. Unfortunately, however, they frequently fail to consider the *saturation* point (the point at which a generic user has absorbed the maximum amount of data that they can handle at any given time) and the *immunisation* point (the point at which users develop a strong resistance to the messages contained on the site). There is an ongoing discussion among academics about the way in which technological fundraising strategies could be changed for the better. Some feel that there is a strong need to reach people individually and to motivate them to enrol as future donors while at the same time inspiring established donors to continue making donations. Others feel that what is already known about advanced elearning techniques is not being adequately applied to the actual methods that are being used online to solicit donations.

4. Modern learning paradigms that are relevant to fundraising technologies

While most fundraising organisations use widely accepted methods for approaching and motivating donors, most tend to underestimate the communication possibilities inherent in certain modern forms of technology. The fact that many fundraising organisations have begun to operate as profit-making organisations that sell their products seems to have made them oblivious or one of the most important ethical imperatives for fundraising organisations, namely, educating their donors in the importance of the moral dimensions of charitable donation as well as the necessity for the services that they provide to those who cannot provide them for themselves. More attention is thus devoted to planning strategies to accumulate the funds that they need to maintain the organisation and its work at the expense of teaching their donors about the importance and value of giving to charitable and humanitarian causes as a moral activity that is valuable in itself. A typical scenario encountered by online users who access fundraising organisation websites is the following:

1. A main page that contains a number of links by means of which the user can access other categories of information.
2. An assemblage of a pictures, figures, videos and diagrams that explain how the most recent solicitation campaigns have fared together with extensive articles that are concerned with the issues that would be of interest to those who are most likely to become donors.
3. Site maps that direct a concerned user to explanatory information that describes the history and mission of the organisation as well as information about the past and present activities in which it has engaged.
4. Link(s) for accessing a secure donation page on which those who so desire can record their personal data and commit themselves to making various kinds of donations as well as offering whatever other voluntary services the organisation may need to further its aims.

It is evident that this kind of website structure and layout strongly resembles that of a well-organised book that is intended to provide students with the greatest amount of relevant information in the briefest possible format. The title page thus serves to introduce the reader to what he or she might expect in the book. The links on the website are equivalent to the table of contents that describe the chapters. The articles on the site are equivalent to the chapters of the book. The site map serves the same function as the index. Photographs,

pictures and figures serve the same function in both formats. The secure donation page on the website is equivalent to a card inserted in the book, that solicits funds to cover production and distribution costs. Just as books that are unwieldy, unattractive and poorly organised are unlikely to attract readers, so a website that is poorly organised, confusing and unattractive will attract a few readers and even fewer donors. A table of contents that contains incomprehensible and poorly constructed chapter and section headings, will immediately alienate the average reader. Content that fails to stimulate interest will not motivate readers to further investigate what the book has to offer. Just as a reader who is intriguing by all the factors mentioned above will become more involved with the actual content and purpose of the book, so a reader who is antagonised by all the negative factors referred to above will quickly lose interest in whatever the book has to offer – however valuable it may be. The parallels between an effective book and a website that attracts and holds the attention of an online viewer, are helpful for understanding what it is that is required to make a fund-soliciting website effective.

Some organisations, such as those that partly or wholly use the informative graphic interface of FELM (2009) and Unicef CH (2009) are largely successful in educating donors in the value of their contributions for alleviating distress and furthering the work of humanitarian and charitable organisations. But such websites represent only a small fraction of those that are designed to motivate new donors and persuade established donors to maintain their support. The vast majority of fundraising organisations tend to rely on the conscience and compassion of potential and established donors to motivate them to give or to continue giving. In so doing, they place an inordinate emphasis on the kind of information that is contained in graphs, numbers and statistics – information that is mostly indecipherable and incomprehensible to the majority of non-specialist donors. This kind of approach is naïve and shortsighted and is bound to be ineffectual in the long term. Organisations that rely on such uninspiring, conventional and traditional methods of motivating donors will probably encounter great difficulty in increasing the amount of their donated capital and the number of their participant donors in the long run (Ajzen, 2006).

When we assess the value of modern learning paradigms in the fundraising sector, it is vitally important to emphasise the fact that technology will completely transform learning processes in the education industry within the next five years. Much progress has already been made in the transformation of education in highly developed countries, and, in the absence of catastrophic unforeseen circumstances, we will witness a period of exponential growth in the use of elearning as elearning as it replaces conventional "talking head" lecture-room teaching and learning in the education system (Glenn, 2008). For this reason alone, it is both naive and shortsighted to expect that there a similar transformation is unnecessary in the world of fundraising technologies. It is fact vitally important to the survival of fundraising organisations for those who design their methods and approaches to make full use of the proven successes of elearning methods in the academic world. If fundraisers incorporate the lessons pioneered by elearning experts into their fundraising approaches, they will be able, not only to educate their donors in the moral and ethical value of donation as a humanitarian activity, but will also be able to motivate established donors to remain on the donor list and to increase their donations as and when they can. Any failure to understand the way in which people have become accustomed to being approached in this electronic age is bound to undermine the financial health and the administrative viability of donor organisations in the years to come.

5. RoboBeggar and InfoKiosk: description and analysis

The architecture of the InfoKiosk software that was installed in the multimedia kiosk is a variation on the original software that was used for the gynoid RoboBeggar (see Figure 1 above for photographs of both the RoboBeggar and the InfoKiosk). An anthropomorphic avatar was integrated into the software of the InfoKiosk system by the creation of a frame distribution in the user interface (De Carlo, 2007). This enabled the necessary modularity changes and updates to the software elearning components, and these factors ensured that all the advantages of Java easy *object oriented programming* would be preserved. The software components that were removed from the InfoKiosk included the microcontroller of the motor (because the robotic hardware had already been removed), and the internal Internet browser software. While the RoboBeggar robot interacted with users by means of movements, verbal communications and touch-screen responses, the InfoKiosk interacted with users by means of a touch screen, verbal communications, and the actions and reactions of the avatar. The modules that were deactivated in the InfoKiosk were still present (though dormant) in the software and were thus ready for possible reactivation should it become necessary to construct a robot that required the RoboBeggar software or the hybrid version of the software in the InfoKiosk.

It is necessary at this point to say something about the Java program that is part of the two fundraising hardware systems. The software of both the RoboBeggar and the InfoKiosk fundraising systems connected the various modules which, in turn, interacted with one another by means of a message-passing mechanism. The main module of the system was the *kernel module*, which was responsible for the behaviour of the system because it regulated the function orders and commands. When the whole programme was loaded into the system, all of its components, as well as the configuration of the system, were stored in XML files. These included the sound responses, the repertoire of movements performed by the robot, and the different attitudes and responses that the avatar was able to convey to a user. The InfoKiosk software was finally reconfigured so that it could run from within any directory and maintain stable databases.
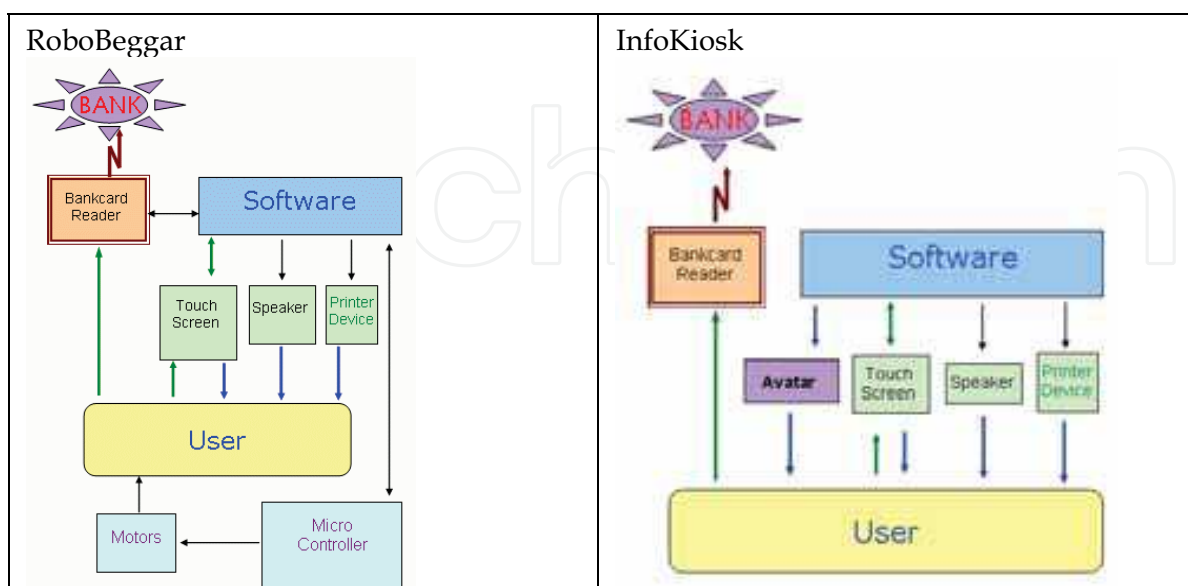
Fig. 2. The respective structures of the RoboBeggar (left) and the InfoKiosk (right)

5.1 RoboBeggar architecture

The RoboBeggar was an interactive automated robot designed for various fundraising purposes and elearning activities (La Russa et al., 2005). Elearning modules were integrated into the software so that possible donors might become sufficiently motivated and intrigued to make donations. The robot consisted of a complex combination of software and hardware devices that included:

- Software (to manage and control the whole system)
- A touch screen (so that users could enter their inputs into the software)
- Servomotors (to move the robot's head and limbs
- A microcontroller (to control the robot's movements)
- Speakers (for enunciating vocal communications to the users)
- A printer (to provide users with a receipt describing their completed bankcard operations)
- A bankcard reader (so that the users' accounts could be charged according to their instructions)

The servomotors controlled the movements of the head, the arm and the hand. The robot itself was able to move through 6 degrees of mobility (DOM). The software controlled the movements of the robot by means of a microcontroller that was connected to the system through a serial port (COM1). The robot could make a range of appropriate pre-recorded vocal responses about its purpose and donations through its loudspeakers. The touch screen presented a selection of data, pictures and information relevant to the fundraising targets to its users. Since the successive actions of users were tracked through their interactions with the touch screen, the software was able to count the amount of idle time and the time that passed between any two events initiated by a single user. The bankcard reader, which was provided with GSM transmission for the communication of data to banks by means of secure servers, was connected to the system through a serial port (COM2). The bankcard reader was therefore capable of reading the bankcards' magnetic tape and charging the required amount to the donor's bank account via the GSM connection. The printer, which was integrated with the bankcard reader but which was easily detachable so that it could operate through an external standard printer, provided the donor was a receipt after the money transaction had been completed.

5.2 InfoKiosk architecture

The InfoKiosk software was based on the core software that we had already used for the RoboBeggar because it was also designed to solicit donations for different purposes by using elearning modules and vocal communications (La Russa et al., 2008). The virtual avatar software was therefore adapted from the robotic program. This software was then installed into a multimedia pillar kiosk that was about 80 cm in diameter and 160 cm tall, and which was equipped with electronic components and multiple connectors (Figure 1).

Interactions with users occurred by means of a touch screen. During interactions with users, at the user interface always portrayed an image of the anthropomorphic avatar so that it could function as the "ego" or virtual personal identity of the InfoKiosk. The main purpose of the avatar was to encourage users to interact generously with the system by creating a friendly, amusing and interesting interface during the donation solicitation process and during that time that the donor passed through the various stages of the automated learning program. The successive phases of the interactions generated by the InfoKiosk were

basically very similar to those used by the RoboBeggar because they both used similarly structured e-learning modules (screenshots with associated vocal messages and graphical information). Even though some users remembered the RoboBeggar from their previous interactions with it, none were able to recognize the similarities between the user-interface software employed by both systems. The microcontroller and the motors in the original architecture were rendered dormant even though they remained present in the code of the common software. Figure 2 presents a graphic representation of the architectural structure of the InfoKiosk. Figure 3 (below) are screenshots that capture the appearance of the avatar and the way in which it was presented to users.
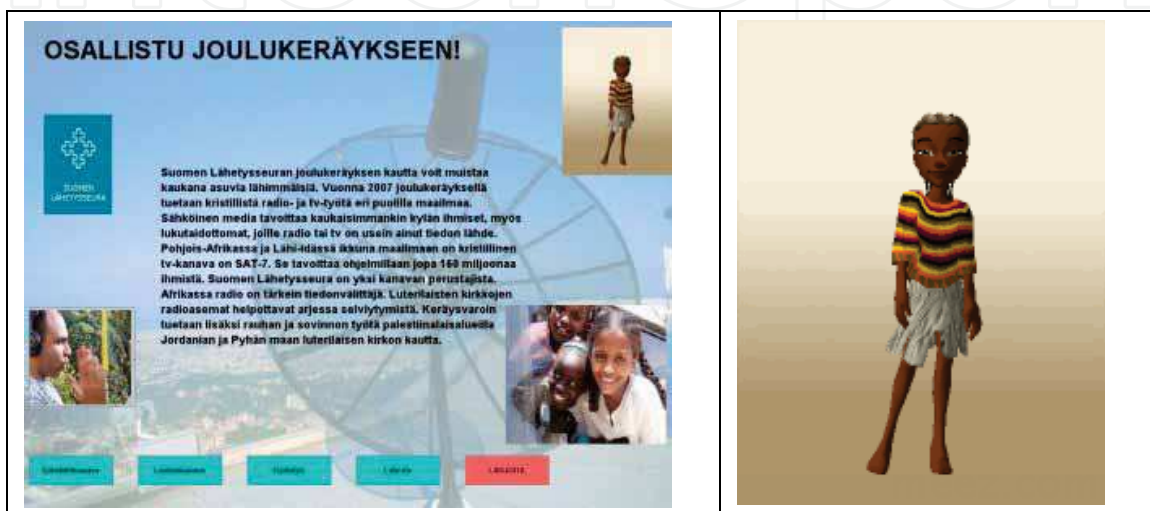
Fig. 3. A main window of the InfoKiosk user interface (left), and appearance of the avatar (right)

5.3 Analysis of the data from the test cases (trial runs)

Multiple Choice Questionnaire (MCQ) forms that were designed to provide the researchers with additional data for use in analysis and evaluation, were offered to people who approached the fundraising systems during their trial runs. The questionnaires were similar for both systems, and consisted of questions that provided information about:

(1)   Gender
(2)   Age group
(3)   The functionality of the RoboBeggar/InfoKiosk (seven questions)
(4)   The effectiveness and influence of the RoboBeggar/InfoKiosk (four questions)
(5)   User evaluations and assessments (five questions)
(6)   The donation system application (four questions)

A blank space was included in which users could write any additional messages they wished to send to the researchers and/or the designers of the RoboBeggar or InfoKiosk. A message in large bold letters at the bottom of the first page of the questionnaire requested users to record any additional personal observations, contributions or comments on the reverse side of the questionnaire form.

In order to avoid confusion or interpretative errors on the part of the researchers, users could respond in one of two possible ways according the type of question being asked (Uebersax, 2006):
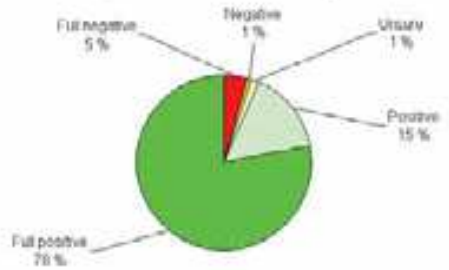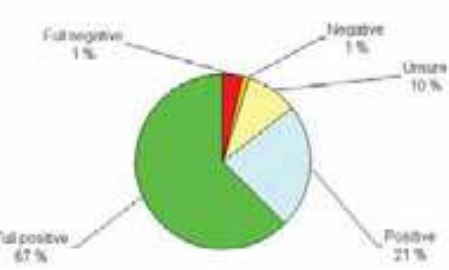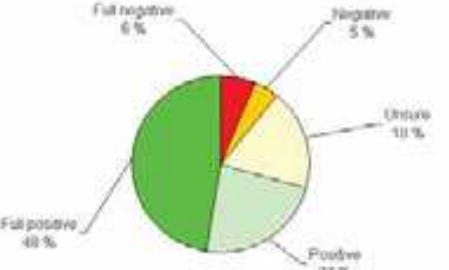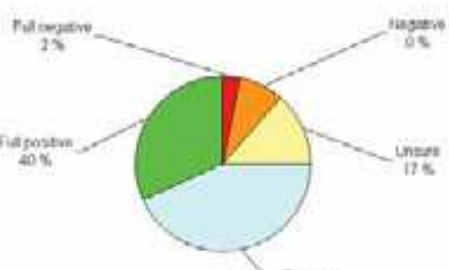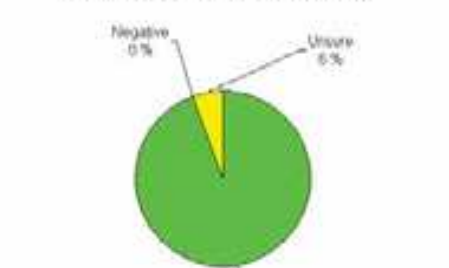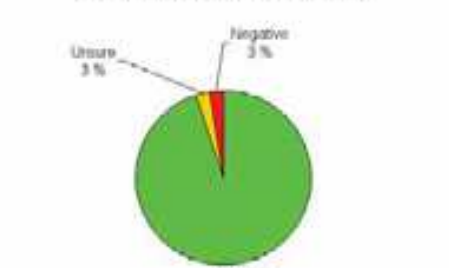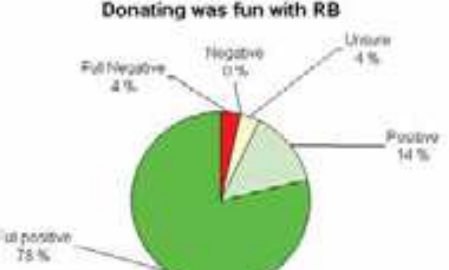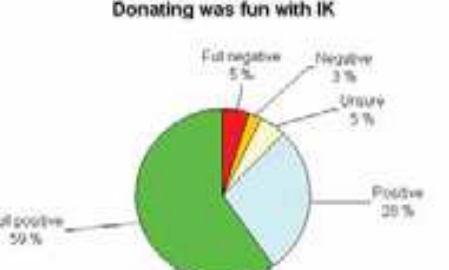
(1)   They could express their opinion in terms of the following scale:
          1 = My opinion is completely different.
          2 = My opinion is largely different.
          3 = I cannot decide on an answer (I am unsure).
          4 = My opinion is largely the same.
          5 = My opinion is exactly the same.

(2)   They could choose one of the following three options:
          ▪   No.
          ▪   I cannot decide (I am unsure).
          ▪   Yes.

The comparable data collected during the trial runs of the RoboBeggar and the InfoKiosk is represented in parallel diagrams in Table 1 (below). The data is presented by means of percentages of total answers obtained in response to specific questions or statements. The RoboBeggar and InfoKiosk trial runs were undertaken in Finland between 2003 and 2008. These trial runs or test cases were conducted at the following places and on the following occasions (La Russa et al., 2008):

1. *Large Non-Profit National Meeting Case*. June 2003. Thousands of people attended this meeting. Its purpose was to attend to various matters concerning the activities and business of a large non-profit national organisation.

2. *Bank Hall Case*. September 2003. The purpose of this meeting was to consider matters relating to fundraising campaigns in developing countries. We placed the RoboBeggar inside a bank hall through which hundreds of people were passing by.

3. *Cancer Campaign Case*. February 2004. The purpose of this meeting was to consider matters relating to a fundraising support campaign on behalf of a national non-profit cancer-fighting organisation. We play the RoboBeggar in a mall where thousands of people passed by.

4. *Developing Countries Case*. December 2004. The purpose of this meeting was to launch a non-profit organisation to support various causes in developing countries. We placed the RoboBeggar in the entrance hall of a modern church which was attended by hundreds of people every week.

5. *Work With People Case*. December 2007 to January 2008. The purpose of this meeting was to support the campaigns of a non-profit organisation that was engaged in humanitarian work with people in developing countries. We placed the InfoKiosk in the entrance hall of the same modern church building that was used in the case of the *Developing Countries Case* (#4 above). Hundreds of people attended the meeting.

We analysed the data so that we could obtain a clear idea of how the two systems performed when faced with similar fundraising goals and similarities in objectives and achievements. The graphic below (left) presents data collected by the RoboBeggar during the *Large Non-Profit National Meeting Case* event that was made available for interaction with meeting participants throughout the whole course of the event. The graphic below (right) presents data collected by the InfoKiosk during the *Work With People Case* events that took place in a church that volunteered the use of its buildings for the occasion (La Russa et al., 2008). We took deliberate steps to ensure that the structure of the elearning modules remained structurally similar in both systems so that we would be in a position to make valid comparisons between the different sets of data at a later stage. In some cases, users took the opportunity to make a variety of personal comments and remarks. Even though some users remembered the RoboBeggar from previous interactions, they failed to recognize

that the user-interface software that was used in both was in fact the same software. Additional data included data obtained from Focus Group interviews and observations of the behaviour of users as they interacted with the two systems.

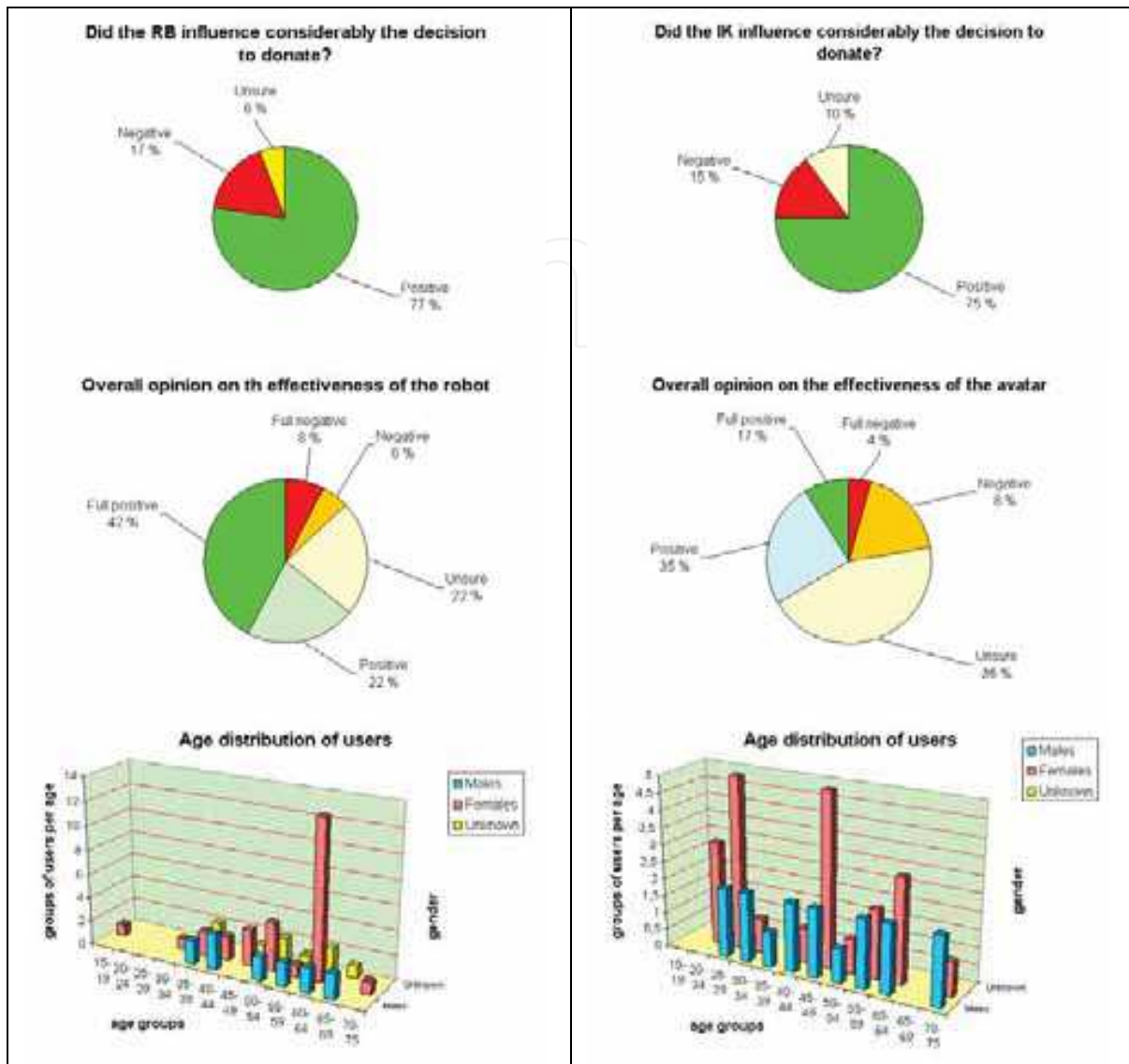| Feedback from the RoboBeggar test cases	Feedback from the InfoKiosk test cases

Table. 1. An analysis of the data that was obtained during interactions between the RoboBeggar and the InfoKiosk and their respective users

We set up the RoboBeggar and the InfoKiosk on the same premises (Figure 1 shows how they looked when they were on the same location) so that we would be in a position to detect differences in their performances under similar circumstances. Table 2 (below) sets out the most significant differences between the two systems from an analysis of the feedback data in adjacent columns (below).
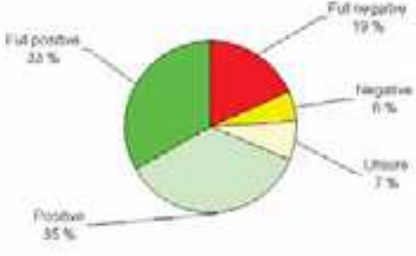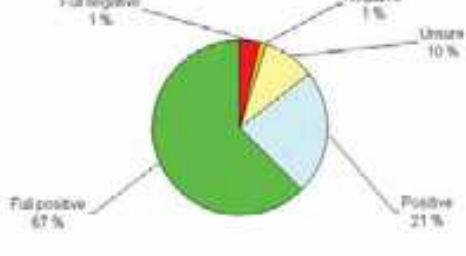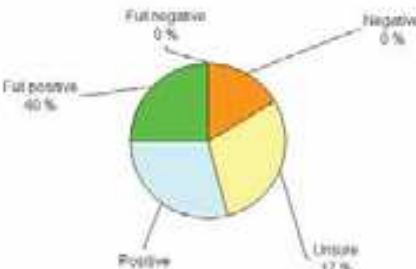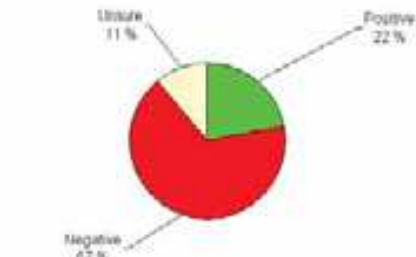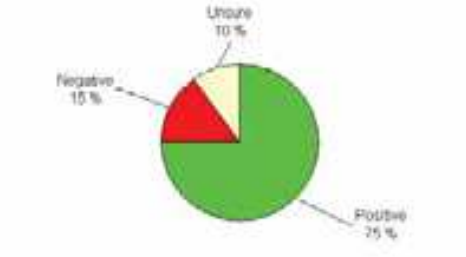
Data relating to the RoboBeggar when it was set up in the same premises as the InfoKiosk	Data relating to the InfoKiosk when it was set up in the same premises as the RoboBeggar

Table 2. An analysis of comparative data when the RoboBeggar and InfoKiosk were set up in the same environment

The most striking differences were observed in the reactions of people to the two systems when the RoboBeggar and InfoKiosk were set up on the same church premises and when the RoboBeggar was set up in other (secular) environments. The cognitive reactions of the donors were for some reason more pronounced when they used the InfoKiosk on the church premises than when they used the RoboBeggar in the same location. The RoboBeggar performed well in other locations and during other events, it did not perform as well as the InfoKiosk under similar church circumstances.

All in all, these elearning-based fundraising machines proved to be both efficient and effective in soliciting donations if they were set up in appropriate environments. The InfoKiosk in the *Work With People Case* (in the church environment) outperformed the RoBobeggar in the *Developing Countries Case* (in the same church usage) because of its non-

intrusive hardware (even though the two systems were utilising practically the same software structure and very similar elearning modules). The data shows that people reacted negatively toward the RoboBeggar because of its humanoid appearance. Our personal observations on these two test cases also confirmed that the humanoid appearance of the RoboBeggar made many people who approached it feel uneasy. The people who used the anthropomorphic robot were at the opinion that the anthropomorphic robot would be more appropriate for locations other than church premises. People felt reluctant to interact with the RoboBeggar on the church premises because of what they felt were the spiritual implications of *human beings* interacting with *humanoids*. The cultural and religious education of the members of this church (i.e. their conviction that a church should only be used by living people), made them feel acutely uneasy about permitting a robot that mimicked human behaviour to perform in a sacred environment. On the other hand, those who were brave enough to use the RoboBeggar for the donation purposes on the church premises evidently appreciated its performance, the service that it made available, and its learning features. But even these people retained a *negative attitude* toward the robot (as is evident from their feedback and comments). The people who attended the church somehow perceived the RoboBeggar as some kind of threat to the supremacy of *human* self-consciousness and uniqueness. The InfoKiosk, by contrast, was perceived as a neutral tool that in no way mimicked human behaviour or consciousness, and they therefore raised no objection to its presence and purposes – even though the software that activated both systems and the routines through which it took all donors were, for all practical purposes, identical. Not even the avatar-like features of the InfoKiosk seemed to bother them.

6. Discussion

Our observations of the behaviour of the people and users of the two systems confirmed that the InfoKiosk was regarded as less intrusive and somehow less threatening than the RoboBeggar. At the end of each of the seven church services after which users were given opportunities to interact with and utilise the InfoKiosk, no one showed any signs of repulsion or uneasiness in the presence of the InfoKiosk or any uneasiness with the way in which it worked. (The InfoKiosk, exactly like the RoboBeggar in the test case *Cancer Campaign Case*, called out to people to approach it and to begin to use the donation system that it contained.) We noticed that people moved around the entrance portal of the church without creating any empty space around the InfoKiosk, while, in the case of the RoboBeggar that was set up in the *Developing Countries Case*, people created an empty space with a radius of about 2-3 meters around it. The only exceptions to this were made by the children who, by contrast, used to approach the RoboBeggar joyfully and playfully out of simple curiosity. We also noted that, during some events, many people were clearly delighted and positively curious about the InfoKiosk – despite the fact that they were obviously in a hurry to leave the place.

The focus group interviews that were conducted with the cooperation of church pastors, deaconess, partners, local workers and event organizers, confirmed the live observations that we made in the *Developing Countries Case* and the *Work With People Case*, namely that people felt relaxed and in no way disturbed in the presence of the InfoKiosk (the only exception to this was that some workers collided a few times with the InfoKiosk because they were either distracted or because they had not yet become accustomed to its presence

and location). Those who most enthusiastic about the InfoKiosk were the children. They asked numerous questions about the InfoKiosk and its functions, and the InfoKiosk screensaver (an animated rotating globe of the Earth) became occasions for learning and discussing some of the basic facts of geography). They also wanted to know how they could access the learning modules. This behaviour of children was similar toward the RoboBeggar during the *Developing Countries Case,* and they demonstrated a great deal of curiosity about the mechanical components of the robot.

Apart from the Multiple Choice Questionnaire, people returned some written comments during the trial runs in order to contribute to the systems' assessments and further design. Most of the comments concerned the use of bankcards (people were unsure about whether they could use a debit card in place of a credit card), and some were uncertain about how to operate the bankcard reader (they were uncertain about the direction in which they should swipe the card and how quickly or slowly they should do this in order to make contact with the machine). Some users complained about the fact that the text was too small for their visible acuity in the visual learning modules. In other cases, people made suggestions about how the instructions could be rephrased or corrected in the text of the learning modules. A few users asked for more donation options or access to similar non-profit fundraising organizations to which they wished to contribute. Similar comments were made in the focus groups. We were struck by the fact that people did not attach much importance to the presence of the avatar in the InfoKiosk, but that their attention was more absorbed by various aspects of the learning modules.

The fact that the systems were capable of talking back to donors and users constitutes a milestone in the design and production of machines that utilise human-machine interaction for fundraising purposes and behavioural studies. We fully expected that no one would try to talk directly back to the InfoKiosk, and no one did. But in the case of the RoboBeggar (La Russa & Faggiano, 2004), this happened quite often. While some people have expressed doubts about whether the avatar can help to realise donation targets or stimulate the donation process, an analysis of existing data shows that, in the current state of the art, there is no clear advantage in using avatars in integrated elearning fundraising systems. While the mean average donation for the RoboBeggar (in the *Large Non-Profit National Meeting Case*) was 12.6 €, the mean average donation obtained from the InfoKiosk (in the *Work With People Case*) was 10.9 €. In 2007, the local mean average donation obtained by non-profit organisations (for whom the *Large Non-Profit National Meeting Case* and *Work With People Case* were organised) by utilising the usual (conventional) channels and methods of fundraising, was 5.8 € (Kirkko, 2007). These figures speak for themselves.

7. Conclusion

There is a technological gap that the fundraising organisations should strive to reduce and, if possible, eliminate, and that is the use and integration of advanced elearning technology in their modes of solicitation and strategy planning. Although volunteer work and activities might be partly effective in augmenting below-par e-incomes during times of economic depression, it is our conviction that the neglect of the vital role that elearning can play in motivating donors and encouraging them to continue with their donations, will ultimately subvert and endanger the good relationship that traditionally prevails between donors and the non-profit organisations that they support.

Our research demonstrates that the actual design of the interactive elearning tools is vitally important to motivate and support donors in their conscious process of giving. It is quite possible to substitute self-motivation for face-to-face activity by making use of specifically designed fundraising systems that facilitate positive interactions between donors and solicitation systems. We also demonstrated that the cognitive attitudes of users can be significantly reinforced by intelligent systems that promote optimal donor behaviour on the part of the donor. Such systems need to be designed on ad-hoc basis because of the attitudes and prejudices that people tend to develop by identifying strongly with particular places and circumstances in which certain kinds of behaviour are regarded as appropriate or inappropriate (La Russa et al., 2009).

We also advise designers to use modularity and platform-free software because it is important to reduce costs and the necessity for maintenance in the design of the elearning modules. The design of software based on Java Object Oriented Programming has proved to the very profitable in terms of time saving and the rapid development of new modules and components. The proper design of specific fundraising campaign systems therefore requires experts who are experienced in both elearning and human-computer interactions. Human-machine interactivity (such as refined in computer embedded systems like the RoboBeggar and the InfoKiosk) must be carefully reviewed so that it can be refined and so that the interaction between human beings and the systems concerned can be made as efficient as possible. The modularity of the components is absolutely essential if one wants to design time-saving systems. It is also necessary to pay careful attention to the way in which the surveying tools are organised (this caveat includes the collection of metadata).

The research that we conducted reveals that anthropomorphic robots (such as the RoboBeggar) can be very effective with and attractive to that part of the public who are potential donors, and that they are extremely effective in stimulating affective reactions (La Russa et al., 2009). They do, however, need to be located and used in *open* public (secular) places where their presence will not be regarded as somehow intrusive and inappropriate. We have already indicated how the anthropomorphism of the RoboBeggar can stimulate adverse reactions in sacred places and spaces. In such cases, alternative non-anthropomorphic systems (such as the InfoKiosk) can be used as an effective substitute – provided that those elements that might be regarded as too human, are thoughtfully eliminated. For practical reasons, the dimensions of the fundraising tools need to be suited to the intended usages, the places of collection, and any other predictable working conditions. The best way to create a functional elearning integrated fundraising system is to apply the ADDIE methodology (Analysis, Design, Development, Implementation and Evaluation – Kruse, 2009), and to keep one's focus as a designer on the primacy of the envisaged user's needs and expectations, and not to allow one's own expectations and assumptions to dictate the process (Norman, 2002).

Most online systems will, in the near future, benefit from the use of touch screens. It is much easier to access and use software by means of touch. The time is not far off when most systems will be directed by simple human interactions such as the touch of our fingertips, and the use of the mouse and the click will become largely redundant.

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Advanced Learning

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The education industry has obviously been influenced by the Internet revolution. Teaching and learning methods have changed significantly since the coming of the Web and it is very likely they will keep evolving many years to come thanks to it. A good example of this changing reality is the spectacular development of e-Learning. In a more particular way, the Web 2.0 has offered to the teaching industry a set of tools and practices that are modifying the learning systems and knowledge transmission methods. Teachers and students can use these tools in a variety of ways aimed to the general purpose of promoting collaborative work. The editor would like to thank the authors, who have committed so much effort to the publication of this work. She is sure that this volume will certainly be of great help for students, teachers and researchers. This was, at least, the main aim of the authors.

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